4930

Report of the

DEPARTMENT OF HIGHWAYS
STATE OF NEVADA

For the Fiscal Years Ending June 30

1945-1946

ROBERT A. ALLEN
State Highway Engineer

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Biennial report of the Department of Highways.
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LETTER OF TRANSMITTAL

CARSON CITY, NEVADA, July 1, 1946.

HONORABLE VAIL PITTMAN, *Governor of the State of Nevada.*

DEAR GOVERNOR PITTMAN: I am directed to transmit to you the Fifteenth Biennial Report of the Department of Highways for the period July 1, 1944, to June 30, 1946.

State Highway Engineer.

Stanley D. Sundeen
212 So. Nevada St.
Carson City, Nev. 89701

In Memoriam

DURING THE BIENNIUM, DEATH CLAIMED THE FOLLOWING EMPLOYEES OF THIS DEPARTMENT:

TOM C. DOHERTY
T. F. FREDERICKS
HARRY E. HUMPHREYS
FRANK CORSIGLIA
JAMES MILNE
PAUL VETTER
ART LOFORTH
J. H. STERN

DEDICATION

It seems fitting that this report should be dedicated to the ever-growing list of employees of this Department who have served the taxpayers of this State for twenty-five years or more. We, therefore, dedicate the report to those men and women who have so loyally served and are continuing to serve, that we may have and enjoy a fine highway system.

STATE OF NEVADA

FIFTEENTH BIENNIAL REPORT

OF THE

DEPARTMENT OF HIGHWAYS

For the Period
July 1, 1944, to June 30, 1946, Inclusive

ROBERT A. ALLEN,
State Highway Engineer

CARSON CITY, NEVADA
STATE PRINTING OFFICE - - JACK McCARTHY, SUPERINTENDENT
1946

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STATE HIGHWAY OFFICIALS

BOARD OF DIRECTORS

HON. E. P. CARVILLE, *Governor of Nevada*.....Chairman
(Resigned July 25, 1945, to become U. S. Senator)
HON. VAIL PITTMAN, *Lieutenant and Acting Governor*.....Chairman
HON. ALAN BIBLE, *Attorney General*.....Member
HON. HENRY C. SCHMIDT, *Controller*.....Member

HIGHWAY DEPARTMENT OFFICIALS

ROBERT A. ALLEN.....State Highway Engineer
HOUSTON D. MILLS.....Assistant State Highway Engineer
W. T. HOLCOMB.....Assistant Highway Engineer, In Charge of Planning and Design
ART LOFORTH*.....Assistant Highway Engineer, In Charge of Construction
A. BERNING, JR.....Assistant Highway Engineer, In Charge of Personnel
E. C. POHL.....Auditor
C. V. MELARKY.....Office Engineer
GEORGE R. EGAN.....Engineer of Special Projects
P. R. RAWLS.....Location Engineer
F. H. MORRISON.....Testing Engineer
F. J. BERGER.....Field Engineer
DALE B. PRUETT.....Right-of-Way Engineer
E. T. BOARDMAN.....Bridge Engineer
C. E. WOOD.....Maintenance Engineer
MATT WALSH.....Assistant Engineer in Charge of Equipment
DAN INDERMUHL.....Assistant Engineer, Traffic and Signs
ROBERT F. GUINN.....Manager Planning Survey
R. J. NEWTON.....Assistant Administrator, Driver's License Division
J. M. MURPHY.....Division Engineer, Division No. 1, Las Vegas
J. L. HANCOCK.....Division Engineer, Division No. 2, Reno
F. H. DEPP.....Division Engineer, Division No. 3, Elko
A. G. KINNE†.....Division Engineer, Division No. 4, Ely
W. R. PARRY‡.....Acting Division Engineer, Division No. 4, Ely
J. D. MEACHAM.....Division Engineer, Division No. 5, Tonopah
C. C. BOYER.....Division Engineer, Carson City

*Deceased January 4, 1946.
†In Military Service June 3, 1943, to November 7, 1945.
‡June 3, 1943, to November 7, 1945.

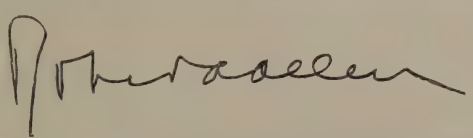
LETTER OF TRANSMITTAL

Board of Directors, Department of Highways:

In accordance with the provisions of section 6 of the Highway Act, your Department of Highways presents its Fifteenth Report, covering the period July 1, 1944, to June 30, 1946. Activities of the Highway Department are set forth in detail.

The excellent cooperation of the Public Roads Administration and the citizens of the State continued throughout the period reported upon to the benefit of the cooperating agencies, the citizens of the State, and to our traveling public.

We appreciate very much the valuable assistance and encouragement extended by you in conducting the business of this Department.



State Highway Engineer.

FIFTEENTH BIENNIAL REPORT OF THE DEPARTMENT OF HIGHWAYS

Chapter 15 of the story of Nevada Highways is presented in the following pages.

The operations of the department continued in the streamlined motive. Early in the biennium, the legislation offered by the American Association of State Highway Officials to the roads committees of the Senate and House was worked into final form by the congressional committees and, although vigorously opposed by a certain block of Eastern States, it was finally passed and became law on December 20 of 1944. In signing the bill, the President stated, among other things, it authorized a national system of interstate highways not exceeding 40,000 miles in total extent to be jointly designated by the States and the Federal Government. It extended Federal aid to projects in urban areas to reduce traffic congestion and accidents in our cities. It provided substantial authorizations for the improvement of farm-to-market roads. It authorized funds on a matching basis with the States for at least a beginning of the huge task of replacing or rebuilding the main roads of our Federal Aid System which are being worn out by the heavy burden of wartime traffic. The legislation made possible the advance planning of needed facilities on a sound basis.

The Department of Highways, through the efficient management of its directors, has conserved its State funds, and was in a position to meet the matching basis offered in the Federal Aid Act of 1944. Surveys were continued, designs worked up, rights-of-way secured for projects to improve the most badly worn sections of our highway system.

Our sections of the National System of Interstate Highways (U S 40 in the north and U S 91 in the south) were selected in conjunction with the Federal authorities.

We sought authorization from the 1945 Legislature permitting us to construct, equip, and maintain a system of secondary or feeder roads within the State, chapter 181, Stats. 1945, and have in conjunction with the County Commissioners of the counties of the State selected a partial system. The details appear under the secondary road heading.

Funds for actual construction during the first postwar year were apportioned to the States on January 6, 1945. Tabulation of contracts let appears under that heading.

The Driver's License Division has functioned normally during the biennium, and has continued its driver education program in the schools of the State and in the University. When new cars are available for all of us who desire to use the highways in a safe and sane manner, we are sure the benefits of driver education will begin to show far-reaching results.

We quote from our 1942–1944 report, as regards extensions to our highway system. These "should be studied carefully and not made for convenience only, inasmuch as the maintenance of these extensions, when constructed, as with all parts of the improved road system, is a State obligation without Federal help."

We refer you to the section on Public Lands in connection with finances for the operation of this department, and sincerely hope that nothing will be done to impair our revenues.

Early in the biennium the directors authorized a work week of forty hours for all employees. This, together with a human approach to the high cost of living and raises in pay for all our employees, has helped to stabilize our force and permit us to keep long-time and valued employees.

During the past year there has been increasing agitation to return large areas of "public lands," lands belonging to the Federal Government, to the States, and a number of bills to that effect have been introduced in the National Congress. There can be no denying that private ownership of lands is to be desired, provided such ownership provides sufficient tax return to the State to compensate for loss of certain Federal aid money grants. Such grants have been made in view of the acknowledged obligations of the Federal Government to assist those States having large areas of low-value land, unsuited for private ownership.

Because any transfer of public lands to the State would affect the matching ratio between Federal and State highway funds, serious consideration should be given to possible sources of future revenue to maintain our highway program in case a sizable land grant were made. A table has been prepared and appears on page 50 showing the net effect of a number of proposed grants.

It will be noted that even for a grant of four million acres it would be necessary for the Highway Department to find nearly $209,000 in additional revenue or forfeit almost four times that amount of Federal funds. Bills before the U. S. Senate propose return of all "public lands" to State control. Such a transfer in Nevada would require the State to raise over three and three quarters million dollars additional highway revenue or lose dollar for dollar the unmatched Federal funds. It would require a State gas tax of 13.1 cents per gallon (14.6 cents combined State and Federal tax) to return such an amount.

RECOMMENDATIONS

It is again recommended that the highway revenues be not impaired by amendment or change in gas tax, plate license tax, common carrier tax, or any other highway revenue that will in any way impair our ability as a State to meet the cooperative requirements of the Federal Government, and at the same time permit the increased maintenance cost on our highway system which we are under contract with the Federal Government to maintain to the high standard fixed by the Public Roads Administration.

It is recommended that some plan of retirement and pension be made available for employees of the department. Many of our technical employees have been with the department for over twenty years. They will reach the point some day when new and younger men will be needed to take their places. There will be no incentive for these young men to seek technical employment with the Department of Highways unless some suitable retirement program is a part of the laws of this State. Private employment where they can enjoy the benefits of social security will be much more attractive to them.

Since section 4 of the Highway Act says that the offices shall be provided by the Capitol Commissioners, we recommend that consideration be given by the incoming Legislature to provide an adequate building to house the Department of Highways. It has long been cramped in inadequate and unsatisfactory quarters for the best efficiency of the department. We call your attention to the quonset huts which it was necessary to purchase and erect to take care of very pressing needs for additional space.

We again recommend the adoption of a Highway Safety Division supported as other State activities are supported, since the safety of so many people who are traveling on our highways is as much a public responsibility as the conservation of wild life and other control measures adopted by our Legislature.

We recommend that legislation be provided permitting the creation of limited access on those portions of the Interstate Highway System (U S 40, U S 91) where such limited access is necessary to provide for the safety of the traveling public.

We recommend the transfer of the Driver's License Division to the Tax Commission since it is a revenue-producing agency for highway use.

We recommend the creation of a Department of State Planning, and the divorce of those functions from the functions of the State Highway Engineer in order that he may devote his energy to highway work.

We recommend that the administration of the gas tax, fuel tax, plate license tax, and common carrier tax collection be reviewed and a definite fixed amount be allocated for the administration of each of these taxes rather than the present percentage basis as set up in the respective laws. Such a plan will be of benefit both to the administrators of the Act as well as to the Highway Department.

PLANNING SURVEY

The Planning Survey, organized as a separate division within the Nevada State Highway Department in the years 1935 and 1936, in compliance with the request of the U S. Bureau of Public Roads that the various State Highway Departments establish fact-finding agencies to gather data and compile statistics on highways and related subjects after a uniform pattern, has expanded steadily through new duties and activities added in each year of its more than a decade of existence. The information assembled and classified forms an ever-growing reservoir of valuable and reliable data useful in programming and designing, for guidance in problems of construction, and of great informational value to Federal authorities and to the States, as well as to private businesses and individuals.

The benefits realized in Nevada make easily understandable the fact that during the past 10 years planning has become a highly important activity of every State Highway Department.

The continuance of planning survey organizations was seemingly assured when, with the passage of the Federal Aid Highway Act in 1944, Congress reasserted the provisions of the Hayden-Cartwright Act of 1935 by providing that "not to exceed 1½ per centum of the amount apportioned for any year to any State under the Federal Highway Act * * * shall hereafter be used with or without State funds for

surveys, plans, engineering, and economic investigations of projects for future construction in such State, on the Federal aid highway system and extensions thereof within municipalities, or secondary or feeder roads, urban highways or grade-crossing eliminations, and for highway research necessary in connection therewith." It is interesting to know that at the present time the matching ratio of funds for the important Planning Survey activities is 82.67 percent from the Federal Government and 17.33 percent from the State.

The original studies required of the Planning Survey were three in number: (1) Inventory, (2) Traffic, and (3) Financial.

By Inventory is meant the logging of the State's rural roads, collection of mileage and roadway data, also assembling information about buildings and various cultural features, and mapping.

Activities under the title of Traffic included a survey of vehicles by volume and type for all the roads in the State, together with studies of truck weights, vehicle origin-destination, and commodities hauled. Results were tabulated and, when appropriate, shown on graphs.

The Financial studies called for investigations and analyses of all subjects related to highway finances, and the results were incorporated in tables, charts, and graphs.

Curtailment of some activities of the Planning Survey was forced during the past biennium, but requests from Federal and Military authorities for data on which to base governmental policies concerning motor vehicles served to more than offset the reduction of usual activities.

During the years of war, various types of funds were made available for use by the Planning Survey for special work provided by the Defense Highway Act of 1941.

Following is a summary of activities by the Planning Survey of the Nevada Highway Department for the past two fiscal years.

INVENTORY

From May until October in 1944, a United States Coast and Geodetic Survey triangulation field party extended triangulation control in eastern Nevada. The area of operations extended westerly from the Nevada-Utah State line, and covered slightly more than a degree of longitude. This work was initiated approximately 30 miles north of Las Vegas, and covered adequately, with new triangulation, the northern portion of Clark County, nearly all of Lincoln County, a large portion of White Pine County, and the southern part of Elko County —an area of approximately 15,000 square miles.

In conjunction with the above work, a two-man party from the Planning Survey covered the same area, recovering section corners, State and county line monuments, highway control points, etc., which were tied in by the Coast Survey. In this manner much valuable control for future mapping was acquired at considerably less expense than if it had been done by Highway personnel during reinventory of the area at a later date. The same two-man party also identified and marked on aerial pictures the various triangulation stations, where such pictures were available. An area of nearly 8,500 square miles in Clark and Lander Counties was also covered, and is now ready for immediate mapping by modern photogrammetric methods.

The month of January 1946 marked the beginning of preparations

for the reinventory of Clark County. The actual field work began on March 11, 1946. Two cars were used, one by a field control man who carried in triangulation to road junctions, etc., the other by an inventory supervisor who did the relogging. The reinventory work for Clark County was completed on June 14, and required a total of 69 actual working days. The highest mileage relogged in a single day was 85, and the average for a day's relogging was 32 miles.

The original plans made in 1936 called for a complete reinventory of one-fifth of the State's roads each year for keeping the data current. This reinventory was started late in 1941 in Washoe, Ormsby, and Storey Counties, but due to the restrictions imposed on travel during the war, and because of limited office and field personnel, the field work was halted until March 1946.

MAPPING

The original mapping program of 1936 and 1937 was productive of maps covering the State's 17 counties in 48 sheets, and a State map, bearing vital highway and cultural information, supplemented by 27 sheets showing 62 congested areas in unincorporated towns or immediately outside incorporated areas. Providing the only complete map coverage for the State, they are in great demand and rated highly by both military agencies and the general public.

In keeping with the policy of having accurate and up-to-date maps for distribution, the General Highway Map was completely revised in July 1945, with all the State routes, important connecting roads, and surface types corrected to that date.

Early in 1944 the Highway Department was requested by Federal and other interested agencies to take the lead in programming future mapping work in Nevada. Quoting from the biennial report covering the period which ended June 30, 1944, "The purpose of this move was to try to avoid the overlapping and waste in mapping which has occurred during the past when each agency provided its own maps for its own particular purpose, as a consequence of which the total amount spent was sufficient to have provided first-class base maps of the entire State, although few were produced which would meet a national standard."

Subsequent developments credit Nevada for supplying the initiative for action by most of the other 11 Western States in appointing mapping committees and in adopting programs similar to that in Nevada.

A representative of the Nevada Planning Survey attended a meeting held in Twin Falls, Idaho, on December 15, 1944, for consideration of postwar mapping. At this meeting representatives from Utah, Idaho, and Montana were made acquainted with the Nevada program and, following Nevada's lead, decided to call, in each State, a meeting of all interested map-users and map-producing agencies.

Nevada's then Governor, E. P. Carville, in his address at the Governor's Conference at Mackinac Island, Michigan, on July 2, 3, 1945, presented the subject of a greatly needed Nation-wide mapping program as follows:

"One important step leading to the development of a program of conservation should be immediate action to overcome the serious handicap caused by the lack of adequate maps of those regions containing our natural resources. Few people realize that the greater

part of this country is inadequately mapped; and in Western States, especially, vast areas have not been properly charted.

"We should promote a program to complete the mapping of this country at an early date; for until this is done it will not be possible for us to inventory and catalog our resources and plan for their efficient use. At present there is a great deal of activity in many of the States to develop a Nation-wide mapping program, and this work should be encouraged."

The Western States Board of Maps and Surveys was created at the meeting of Governors of Western States in Cheyenne, Wyoming, in 1945, by adoption of a resolution introduced by Governor Vail Pittman of Nevada. This board is to develop an overall mapping program to be approved by the Governors and later passed on to the proper Federal authorities for action.

At the present time plans are under way for distribution of questionnaires to various interested agencies in Nevada for the purpose of establishing priorities for aerial mapping on the broadest possible basis of need. The State is well prepared for whatever may develop with regard to the mapping program, because for several years the Planning Survey, in conjunction with its routine mapping activities, has been assembling all available data on mapping control. A complete file of all triangulation and bench mark data is on hand, and available to the general public on request.

Various miscellaneous projects carried on during the biennium include: (1) detailed mapping of Army and Navy installations in Nevada; (2) partial reinventory of the city streets in Lovelock, Winnemucca, Carlin, Elko, and Carson City; (3) preparation of the annual traffic flow maps, which show the results of traffic studies during the calendar years 1944 and 1945; (4) preparation of State maps showing the approved Federal Aid, Federal Aid Secondary, Forest Highway, and Federal Land projects; (5) preparation of numerous sets of county maps with reference to the Federal Aid Secondary System, both prior to and following final approval by the Public Roads Administration.

Layout work on new base maps for Washoe, Storey, Ormsby, and Douglas counties was carried on in 1945, although on a reduced scale because of the shortage of personnel, but in January of 1946 the office mapping work was speeded up appreciably when additional personnel became available. The field work done during 1941 was thoroughly reviewed, and the scheduled map work on the Washoe County hard copy series was completed. When the Clark County reinventory logs began to arrive, the plotting of them was started.

The recommendation in the Fourteenth Biennial Report of the Department of Highways for Nevada that "suitable legislation be enacted to provide the State of Nevada with a system of coordinates for designating and stating the positions of points on the surface of the earth within the State of Nevada," was adopted by the Legislature during its 1945 session. Accordingly, since July 1, 1945, effective date of the law, the use and benefits of the "Nevada Coordinate System" have been available at their option to all engineers, agencies, and organizations of the State engaged in surveying and mapping. The Legislature's action added Nevada to the steadily increasing number of States recognizing and adopting systems of coordinates which have become

international in their coverage. The Nevada Planning Survey was advised that a U. S. Coast and Geodetic field party would be sent to Nevada in the near future to undertake the necessary observations for triangulation in the Reno-Sparks, Winnemucca, and Las Vegas areas, thus facilitating the use of these modern methods in these areas.

TRAFFIC

At the end of the biennium covered by this report the Planning Survey had in operation "fixed" or "stationary" type automatic recorders at 16 selected stations believed to give representative pictures of vehicular traffic throughout the State. The location of each fixed recorder, and the annual daily average traffic past the automatic counter during each of the last six fiscal years are shown in Table 30 of the Appendix. Also shown are the percentages of traffic change from year to year. These annual figures from the fixed recorders keep the traffic data current for the principal roads of the State. Supplemental data necessary for a more complete picture of the State's vehicular traffic are obtained through use of small "portable" recorders, which are installed weekly. Thirteen schedules of approximately 20 stations each are maintained throughout the year. Under the present arrangement approximately 454 sites for counting traffic are used one or more times annually.

During the past biennium numerous short-period manual classification counts were taken separately or in conjunction with the regular portable recorder operations for the purpose of obtaining information for traffic classification and volume within unincorporated towns.

The annual traffic census, taken in July of each year during a week not including the abnormal Fourth of July traffic, covered the period July 10–16 in 1944 and July 9–15 in 1945. The results of these studies at 80 odd stations, breaking down the traffic totals into commercial, foreign, and Nevada cars, are published annually in a separate pamphlet entitled "Tabulation of Annual Traffic Census."

For the purpose of obtaining accurate classification of traffic on a year-round basis, manual 8-hour or 16-hour counts are taken one day in January at 43 July manual count stations regarded as key road junctions of the State.

During the biennium the Planning Survey was called upon to make a greatly increased number of special studies of traffic. It was possible to make these studies promptly and satisfactorily largely because of the acquisition during the biennium of 20 additional portable traffic recorders, which were used without delaying or interrupting the regular portable schedules. Also of great use in the special studies, and as a "spare" for the fixed recorders, was an additional recording type portable recorder purchased in March 1945. Due to the fact that this recorder prints on a tape the vehicle count at every 15-minute interval, it has been possible to arrive at a more accurate and complete breakdown of traffic counts taken in cities, and also to provide better factors than those obtainable by recorders of other types.

FINANCIAL

The three subjects of the Financial section's continuing work are (1) Fiscal Survey, (2) Statistics, and (3) Road Life. To these were

added, during the war, two special studies, the Truck and Bus Inventory and the Industrial-Occupational Survey. These studies were requested by the Highway Traffic Advisory Committee to the War Department. All motor vehicles registered in the State were broken down into types, and according to their respective use by occupations and industries, giving a complete picture of available motor vehicle transportation facilites in Nevada.

FISCAL SURVEY

The continuing work of the Fiscal Survey involves contacting each of the State's local taxing units, 42 in number, of which 17 are counties, 15 are incorporated cities, and 13 are special districts covering unincorporated cities and towns that levy or expend funds for street and road purposes. The fiscal survey work during the biennium has been limited, mainly due to the lack of clerical help and restrictions imposed on travel. However, in June of 1946 plans were made for bringing the local fiscal study up to date.

STATISTICS

Tables 33, 34, 35, and 37 of the Appendix give comparative data on revenue by months for the calendar years 1942, 1943, 1944, and 1945 from the State's major sources of motor vehicle revenue, namely, (1) motor vehicle fuel tax, (2) carrier license fees, and (3) motor vehicle registration fees. Table 36 gives comparative data on motor vehicles registered over a period of four years.

Among the many annual reports compiled by the Planning Survey are those covering highway mileages by system, type of roadway, and width. At the close of each calendar year a log containing such detailed information for each section of roadway is prepared. In these logs all county lines and city or town limits are identified clearly when survey records permit. Road Life studies provide the data on constructed mileage.

Considerable time was spent in 1945 in revision of the numbering system of the Federal aid roads in Nevada, and in November 1945 the Public Roads Administration gave its final approval of the changes. Table No. 10 of the Appendix describes the Federal Aid Highway System for Nevada as it existed at the close of the biennium, combining the orignal 19 routes into 8.

The local or county road mileage reports, which were discontinued during the war, were again prepared in 1946. Personnel from the Planning Survey contacted each county to obtain needed information on county roads, through interviewing road supervisors and county commissioners.

ROAD LIFE

The continuing inventory of construction and reconstruction of highways is an important activity of the Road Life studies, which provide the basis for estimating the probable life of each type of highway construction. All construction features by projects and other defining designations are recorded, and the cost and source of funds, together with dates, reason, and method of retirement are noted.

Table 35 gives mileage data by surface type for the various subsystems comprising the Nevada State Highway System as of December 31, 1945.

SPECIAL STUDIES

Special studies carried on by the Planning Survey during the past biennium, in addition to several activities treated as continuing studies for purposes of record for their informational value to the public, are herein listed.

TRUCK WEIGHT STUDIES

Repeat surveys of trucking made between July 25 and August 8 in 1944, and between July 31 and August 14, 1945, followed in the main the pattern of the original surveys made in 1936–1937. The surveys of 1944 and 1945 were made at 10 of the 36 stations used for the 1936–1937 studies. For both surveys 8-hour checks were made covering like hour periods, the same weekdays, and as near the same days of the month as possible. In the original survey 630 checks of 8 hours each were made at 36 stations, most of them at main road intersections. The trucks were weighed, and their weight, body type, rated capacity, legal classification, carried load, origin, destination, etc., recorded. In the later studies, however, no information on carried load or trip origin or destination was recorded, but all other 1936 data were sought. Additional data, required in the 1944 study only, related to numbers and sizes of tires and the use classification of each vehicle. This information was incorporated in tables for annual transmittal to the Public Roads Administration as a means of indicating current truck-loading habits.

SPECIAL TRUCK STUDY

In August of 1944 and 1945, and in conjunction with the Truck Weight Studies, a special one-day check of truck speeds on various grades was made on the western slope of the Golconda summit on U S 40. A table and a graph showing the various speeds on the different grades for varying loads were worked up each year.

SPEED AND CAR OCCUPANCY STUDIES

During the biennium speed and car occupancy studies on the U. S. routes in Nevada were made for the Highway Traffic Advisory Committee to the War Department, and also on a continuing study basis for use by the State Highway Department. These studies were carried on during July and November in 1944 and in April of both 1945 and 1946. The speed check sites are six carefully selected locations believed to give representative speed and car occupancy figures on travel along U. S. routes in Nevada. The results of these studies revealed that the average car occupancy remained substantially consistent, at 2.1 to 2.2 persons per vehicle. Car speeds have been increasing gradually since the end of the war. Two checks during 1944 and the check taken in April 1945 gave speed averages of 42.4 miles per hour for the six sites used. The average speed had increased in October 1945 to 45.9, and the check in April 1946 showed another increase to 47.5 miles per hour.

SPECIAL RAILROAD CROSSING STUDY

A special study was made at various railroad grade crossings during August 1944 for the purpose of determining postwar construction priorities for protection signals. The counts were taken at major railroad crossings in the cities and towns, and also at main rural grade crossings. Portable recorders were used in determining the total of vehicles passing each site, and short manual counts were taken at the same time and

place to determine the traffic classification and the number of pedestrians using the crossing. Additional portable counts were taken in 1945 at several sites to supplement information relative to data supplied by the railroads.

REVISION OF FEDERAL AID SECONDARY SYSTEM

The Federal Aid Act of 1944 and its provisions for the creation of a Secondary System on a comprehensive scale necessitated a complete revision of the original Partial Secondary System selected in 1941.

The facilities of the Planning Survey were extensively used in selecting the new partial system. Available data from previous studies were augmented by special traffic counts, pedestrian counts, etc., and furnished factual information, permitting an impartial selection of roads to be considered for inclusion. All maps, route descriptions, and supporting data required in arriving at final approval of such a system were prepared by the Planning Survey.

OTHER SPECIAL STUDIES

A special vehicular traffic and pedestrian study was carried on in Sparks during December 1944 at the junction of U S 40, Pyramid Way, and the main entrance to the Southern Pacific shops. The count of vehicles and pedestrians covered an 18-hour period on each of two days. It was made at the request of the city of Sparks for the purpose of determining protection requirements. Specific recommendations were submitted.

In 1945 the Planning Survey complied with the joint request by the Public Roads Administration and the U. S. Forest Service to compile up-to-date logs giving mileage and other information concerning the 18 routes comprising the Forest Highway System in this State, preparatory to a contemplated revision of the system.

In November 1945 the Planning Survey took special traffic counts at several important street junctions in Las Vegas for use in an advance engineering study bearing on proposed circumferential and distribution routes in southern Nevada's metropolis.

The travel pattern in Reno, both prior to and following the advent of parallel parking on April 1, 1946, was of much interest to the Nevada Highway Department. Portable recorders were installed at several locations in Reno's business district about a week prior to the change-over to parallel parking, and were continued in operation approximately a week after the change. The results showed no appreciable increase in total vehicular travel under the system of parallel parking; but, there was a marked increase in the ease of traveling through the city, materially reducing congestion.

INCIDENTAL SERVICES TO PUBLIC

The several references so far made in this summary of activities by the Planning Survey during the past biennium are merely suggestive of the steadily increasing recognition by the general public of the extent, reliability, and practical usefulness of the data worked up, and the statistics and information gathered by this one division of the State's Highway Department. This recognition is reflected and evidenced by the mounting demand on the Highway Department for data

by surveyors, engineers, business men and firms, public utilities, municipalities, various political subdivisions, and other governmental agencies of the State.

FEDERAL AID SECONDARY ROADS

The year 1944 marked the beginning of an important new era in Federal aid for highways when with passage of the Federal Aid Highway Act of 1944, Congress authorized the appropriation of funds for construction of an integrated net of highways throughout the Nation, including a system of principal secondary and feeder roads.

A Public Roads Administration memorandum setting forth regulations for the selection of a secondary system states in part:

> The Act is held to establish the pattern for a long-range program of highway development designed for the national defense and to serve the major classes of highway traffic broadly defined as (a) interstate or interregional, (b) intercity or intrastate, (c) rural secondary or farm-to-market, and (d) intraurban. The objective of the specific provisions of the Act with respect to secondary roads is considered to be a more comprehensive rural road program through the selection and improvement of a system of principal secondary or feeder roads supplementing the Federal aid highway systems in rural areas, so that together they will form an integrated network in which the two systems complement each other as trunk line and feeder routes.

The Federal Aid Highway Act of 1944 provides a sum of $150,000,000 per year for a three-year period for projects on secondary and feeder roads. This sum is apportioned among the States in the following manner:

One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the *rural* population of each State bears to the total rural population of all the States as shown by the Federal census of 1940; and one-third in the ratio which the mileage of rural delivery and star routes in each State bears to the total mileage of rural delivery and star routes in all the States. The term "rural" as applied to population includes all inhabitants except the population of municipalities of 5,000 or more.

The funds thus made available are matched by the States on a sliding scale, which is determined by the ratio of public lands in each State to the total area of the State; and, in our case, under present conditions, the Federal share is 82.67 percent, the State's share is 17.33 percent. The Act requires that these funds shall be expended on a system of principal secondary and feeder roads, including farm-to-market, rural free delivery mail, and public school bus routes, selected by the State Highway Departments in cooperation with county commissioners and the United States Commissioner of Public Roads.

No specific limitation is placed on the mileage of the State systems of secondary roads, but there are two principal requirements—first, that the selected secondary roads shall constitute an integrated system within themselves and with the primary (Federal aid) roads of the State; and, second, that the extent of the system shall be consistent with

the anticipated finances of the State available for construction and maintenance.

As is the case with regard to the Federal aid roads, the State is required to maintain State-constructed secondary roads to a standard acceptable to the Public Roads Administration. Failure to keep them in such acceptable condition results in penalties being assessed against the State in an amount sufficient to pay for the necessary maintenance work.

In setting up the revised secondary system, it was necessary first of all to determine a method of allocating mileage to the various counties so as to assure an equitable distribution of feeder roads. Just as it is necessary to have a formula with which to distribute the entire Federal appropriation among the States, so must we have one to distribute the State's share of the Federal funds among the counties. In Nevada, where the population is concentrated in two or three areas, its counties ranging in size from 141 to over 18,000 square miles, road mileage (exclusive of the Federal aid system) varying, by counties, from a low of 63 to a high of over 3,000, with travel habits and construction costs at like extremes, the development of an equitable formula should be based upon a thorough knowledge of local conditions. Considerable study and a great deal of experimenting were carried on in an effort to arrive at such an equitable formula. Tables were compiled listing the percentage distribution by counties for all the various factors which might be used as parts of a distribution formula. Such tables indicated vehicle miles, total population, rural population, value of farm products, assessed valuation, etc., with the following being selected and combined, with equal weight, as the formula:

1. Population in each county, exclusive of that within incorporate cities of 5,000 or more population.
2. Mileage of rural roads in each county, exclusive of Federal aid sections.
3. Rural vehicle miles in each county, exclusive of those on Federal aid sections.
4. Total area of each county.

Having developed a formula for allocating mileage of feeder roads to the various counties, it was necessary to adopt a total mileage for the State Federal aid secondary highway system to which the formula could be applied. There were not sufficient data immediately available to make a comprehensive study for determining this figure; information was especially scanty as to the extent of the system the State could support. It was decided, therefore, as a starting point, to use a tentative figure of approximately 20 percent of the total rural road mileage in the State, twice that originally permitted for the secondary system. The total rural road mileage for Nevada is approximately 23,000 miles, therefore a gross mileage of 4,000 miles was set up from which to determine the mileage of feeder roads available to each county. It should be stressed that the 4,000-mile figure was used as a working basis until such time as a comprehensive study could be made of long-range revenue expectations. Beyond doubt, it is greatly in excess of what the ultimate system will be. Not only will added maintenance costs limit its expansion, but after a period of years it will be necessary to reconstruct some of the roads now being built. A table listing, by

counties, the various factors and the allocation percentages and mileages appears in the appendix to this report.

Before selecting the Federal aid secondary system, it was necessary to comply with the requirements of the 1944 Act and establish the "urban areas," in which secondary funds cannot be expended. The Act defines an "urban area" as "an area including and adjacent to a municipality or other urban place, of five thousand or more, the population of such included municipality or other urban place to be determined by the latest Federal census." There are only three cities in Nevada with a 1940 population in excess of 5,000, namely, Las Vegas, Reno, and Sparks. In those instances where an urban boundary line centers along a road, the road is eligible for improvement with secondary funds.

Under the present regulations governing the selection of roads for inclusion in the Federal aid secondary highway system, all rural roads not on the Federal aid highway system nor within "urban areas" are eligible for consideration. A minor exception to the above is a qualification upon the expenditure of funds on access roads to airports until State and Federal highway officials have concurred with officials of the airport as to the interest of the public in such work.

Before attempting to select a revised, partial, Federal aid secondary highway system, consideration was given to those roads already on the Federal aid highway system which through changes in travel habits and development had assumed the characteristics of secondary roads. The following road sections were recommended for removal from the Federal aid system and for inclusion in the secondary system:

1. Carlin Spur from U. S. Highway No. 40 to Carlin.
2. Bunkerville spur from U. S. Highway No. 91 to Bunkerville.
3. That portion of State Highway Route 3 from its junction with U. S. Highway No. 395 at Topaz to its junction with U. S. Highway No. 95 at Schurz.
4. State Highway Route 17 from its junction with U. S. Highway No. 50 near Mound House to its junction with U. S. Highway No. 395 near Reno Hot Springs.
5. A portion of State Highway Route 10 from its junction with U. S. Highway No. 6 near Basalt to its junction with U. S. Highway No. 95 near Rhodes.

Next considered were those roads which had comprised the original partial secondary system. Each road was reviewed in the light of existing conditions, and in only one case was any previously selected route found unsuited for inclusion in the present system; many, however, were revised to include extensions.

Consideration was then given to placing on the secondary system all those road sections constructed with Federal money, such as Federal lands funds, etc., and which were neither on the Federal aid system nor the Forest Highway system. This was done in order to make them eligible for reconstruction as feeder roads with Federal funds.

With these as a nucleus, additional routes were carefully selected in each county, based on traffic and other factors, to assure sufficient mileage to utilize the funds available under the first three-year construction program. No effort was made to reach a specific percentage of selection of allocated mileage, but attention was given to retaining

enough mileage within each county to permit the eventual inclusion in the system of any roads which might later assume sufficient importance to warrant such inclusion.

Descriptions of this tentative system were then prepared for each county with accompanying maps showing the location and number of each road selected by the State Highway Department. This material was then presented to the County Commissioners of each county for criticism and, by mutual agreement, a partial selection of roads to be included in the system was made, and substantiated by adoption of a resolution of approval on the part of the County Commissioners.

It will be noted that the Federal regulations require the selection of the system to be made by the State Highway Department in cooperation with the County Commissioners and the Commissioner of Public Roads. In Nevada, we have attempted to comply with these regulations in the manner previously mentioned; but we have gone further and have asked the County Commissioners to indicate the priority under which the roads in each county should be constructed.

In such manner it is hoped local interests will best be served, with the end result of a substantial amount of State-constructed-and-maintained roads in every county in the State.

ADVANCE PLANNING

Concentrations of traffic in and around the larger communities in the State are imposing an increasing problem in highway transportation. While it is serious in but a few sections at present, there are definite indications that the situation will become more pressing as the growth of the communites combined with increasingly heavy motor traffic continues. A satisfactory solution of the problem, then, involves not only a design which will answer present needs, but one which can be readily expanded to serve requirements for many years to come. Since probable future traffic must be cared for and, in many cases, anticipated traffic volumes will be in excess of the capacity of a single route, it has been found desirable to plan a basic system of highways within each of the larger communities which will integrate the State highway system with the local street and highway system of the community.

Factual data covering a wide diversity of items are necessary as a foundation for the plan. Gathering such data and preparation of a basic system of routes in several communities, notably Elko, Fallon, Las Vegas, and Reno-Sparks area, was started by the Department in the preceding biennium and has been continued since. Studies have included all phases of activity which might affect the use of the highway system during the next 20 years. To ascertain probable future demands upon the State highway system it has been necessary to extend the study to large portions of the local systems in order to estimate their growth and influence upon the State system. The whole highway transportation system is so interrelated that changes in one portion will almost always induce corresponding changes in others.

A detailed report on the Las Vegas area has been completed and has been approved by the Las Vegas-Clark County Joint Planning Commission. A similar report on the Reno-Sparks area is nearly complete, while work has progressed on studies in the Elko and Fallon areas.

As a result of the studies steps have been taken to program for construction improvements to three short sections within Las Vegas, the westerly approach to Elko and the southerly approach to Reno.

In the plans completed or in the process of completion it has not been proposed to establish a new system of highways but rather to develop the existing system to the point of maximum economic efficiency, supplementing existing routes by the inclusion of new routes only where necessary. In determining basic systems every effort has been made to correlate local traffic requirements as well as those of through vehicles. To this end various local authorities have been consulted and the work has been carried on in harmonious cooperation with civic and county officials, particularly with planning commissions where they exist.

Full acceptance of a basic plan proposing routes other than existing thoroughfares requires a reversal of the average conception of local needs in State highways. It has long been a maxim that traffic passing directly in front of a business establishment created trade. This was perhaps correct in the earlier days of motor vehicle transportation, but is not necessarily true in urban areas at the present time. The earlier conception was responsible, in a measure, for the fact that the existing system of highways traverses the business districts of many communities in the State. Increased service to the vehicle operator made this a desirable feature when traffic volumes were comparatively small. Heavy increases in the numbers of motor vehicles and their application to almost every phase of daily life have created a definite change. In many cities all over the country it has been found from actual surveys that from 50 to 75 percent of the traffic within a central business district does not stop within the district, but merely passes through the district to reach points beyond it. This is also true within the larger communities in Nevada and is natural, since routes through the district have been more highly improved as part of the State primary system.

In two of the larger cities in the State, Las Vegas and Reno, portions of the existing State primary routes are approaching or have reached their practical working capacity. It will be possible to add to the traffic loads on these portions, but this cannot be done without causing increasing delays and annoyance to the motorist. In addition to those portions now at or near practical capacity, other portions will reach the same point each year as traffic progressively increases. The resulting congestion tends toward decentralization of the business district, both business and industry moving to less congested areas. It is unanimously agreed by authorities that decentralization is highly undesirable from a civic standpoint since it adds materially to the cost of government services, increases the cost of transacting business, and leads to instability of property values both through lessening of values in the central district and through deterioration of residential properties caused by the encroachment of business in residential areas. That this can be of extreme importance is shown by the so-called "blighted areas" which occur in most of the larger cities in the country. Fortunately, this condition is not yet evident in any of Nevada's communities, but it can easily occur in a short time if preventive measures are not taken.

In some instances it has been found that it is not economically practical to widen existing routes to provide the required capacity for all traffic. Construction costs, high land values, and heavy damage to existing private enterprises make such a course prohibitive. Removal of that portion of the vehicles in a congested area which has no business to transact in the area will serve the same purpose. This may be accomplished by the improvement of other streets or the opening of short routes permitting easier access between separated sections of the community. Any such undertaking must afford at the least an equally attractive route or it will fail in its purpose.

Adoption of a basic plan does not mean that the plan must be rigidly adhered to. It should be considered as a more or less permanent guide, flexible enough to be adjusted to meet changing conditions. While it is possible to estimate future traffic, this does not insure that the forecasts will be fulfilled. It will be necessary, therefore, to review the plan from time to time in the light of newly developed information.

Since the basic plans anticipate traffic needs for sometime into the future it is neither necessary nor financially possible to engage in the immediate construction of all work contemplated under the plan. Construction must necessarily cover an extended period and be confined to those portions most urgently in need. Construction of state highways can include only a very limited number of primary routes, hence cooperation by communities through the improvement of arterial, collector and feeder streets will be necesary if the plan is to succeed as a whole.

Piecemeal construction will have a tendency to increase overall costs, largely through increased land and property damage costs unless preventive measures are applied by the community. One of the greatest benefits which have accrued from the adoption of the Las Vegas plan has been the establishment by the city of minimum route widths protected by city ordinance. With this protection it will be possible to plan construction of various sections, as the need arises and funds become available, with the assurance that insurmountable obstacles in the way of land acquisition will not be encountered.

SURVEYS AND RECONNAISSANCE

During the first half of this biennium location surveys were considerably curtailed. This curtailment was primarily due to the National war effort, which effected a pronounced lack of suitable engineering personnel. However, this decrease in surveys was in balance with the highway construction program for the same period. Except for essential projects, Federal funds appropriations for highway construction were greatly decreased for the duration of the late war.

During the latter half of this biennium survey work has been considerably increased. This was necessary in order to prepare plans and estimates for the contemplated postwar highway construction program, and was largely made possible by the return of former engineering personnel from the various branches of our military service. At the end of this biennium the increased construction program is well under way.

On relocation surveys of the primary routes, especially those designated as interregional highway routes, an effort is being made to

establish as nearly as possible a permanent location of the highway. Not only has an attempt been made to decrease the curvature and grades when reconstructing the older highway sections, but when surveying for new construction, the same type of location in keeping with modern highway design is adhered to. On future reconstruction, this type of location will minimize old road scars and utilize practically all excavation work performed on previous construction.

In the Appendix is a table showing the total amount of surveyed mileage, segregated by the several counties, completed during the biennium. In this table, the miles of surveys, as listed, include only the adopted mileage over which construction is anticipated, and excludes all preliminary and alternate surveys sometimes necessary to determine the most feasible and economical location. The cost of preliminary or alternate surveys and the cost of surveys for obtaining special or additional data on various difficult sections is included in the cost of the surveys. Preliminary and alternate surveys are necessary on certain projects and are a definite part of the ultimate survey cost, and therefore are prorated into the projects on which they occur, and are included in the per-mile cost and total costs of surveyed mileage for the biennium.

DESIGN — ROADWAY

During the past biennium, the Design Department's efforts were confined almost exclusively to the preparation of plans for construction in the postwar period. Plan preparation for defense access roads was virtually completed in the previous biennium and little work was done in this category.

Standards and basic design principles developed during preceding bienniums were maintained, together with natural improvements in design. These design standards conform with and to a certain extent are higher than the requirements for the "Standardization of Highway Design Principles as Recommended by the National Interregional Highway Committee."

Practically all primary roads were designed with a minimum roadbed width of 40 feet, with a surface width of 24 feet, and with shoulders having a roadmix bituminous surface treatment. Secondary roads were designed with 24 foot and 26 foot widths with surface treatment full width. This full width treatment of roadbeds has been developed to provide a more adequate protection of our highway surfaces and shoulders, to insure safer traveling and to decrease maintenance costs.

During the last half of this biennium the personnel in the Design Department has changed markedly. Designers, draftsmen, and computers, in the form of returning service men, have taken over their old duties, while field personnel and feminine computers, delineators, and draftsmen, whose services were enlisted to fill the minimum needs of the Design Department during the manpower shortage, have generally returned to their field jobs or to home or other duties.

A summary of plans completed during the biennium is shown in Table 8 of the Appendix.

DESIGN—BRIDGES AND GRADE SEPARATION STRUCTURES

The appropriations for postwar Federal aid have increased the proportion allotted to secondary and feeder roads. This is reflected in

the bridges placed under construction during the biennium. Of the eleven structures for which contracts have been awarded, only two are on the main highway. These bridges are on U S 91 on the new location between Crystal and Glendale. These replace a dip on which cloudbursts have blocked the road.

Two bridges were constructed over the Humboldt River. One is on State Route 18 near Golconda, and the other on State Route 20 at Palisade. Both of these structures replace county bridges which were old and of insufficient strength to carry traffic for mining operations.

In Smith Valley on State Route 22 there are two bridges over the Saroni Canal. These are reinforced concrete boxes.

The other five bridges are in the Scheckler District southwest of Fallon. These structures are timber bridges with concrete deck and curb and a steel rail. One is over the Carson River and the others are over canals. They replace old structures which were of insufficient strength to carry the heavier loads.

The total estimated cost of the eleven structures completed or under contract is $142,405, not including approaches or channel improvement.

Plans have been completed for seven additional bridges, one timber and concrete bridge over the Reese River north of Austin; two reinforced concrete boxes north of Eureka, and four concrete bridges on Walley Lane northwest of Minden.

A new type of steel rail is being used on some of the bridges. It consists of a single angle supported by 5-inch H posts. This makes a nice looking simple rail which is easy to construct.

RIGHT OF WAY

The increased work during this biennium necessitated by a well-planned postwar program and the abrupt ending of the war was met by the Right-of-Way Department without causing delay in the construction of a single one of the numerous projects commenced during the period. The many adjustments of public utilities, the mushroom growth of buildings along the highways, and the numerous transfers of real estate which occur before right-of-way negotiations can be completed have placed much additional work upon this department.

The major right-of-way acquisitions for the biennium were for State Routes 1, 2, 3, 5, 6, 8A, 11A, 14, 20, 22, 23, and 46. In addition, acquisitions were made for the Minden Airport, Winnemucca Airport, Holcomb Lane, Huffaker Lane, and Franktown Lane feeder roads. Maintenance sites were acquired at Glendale, Tonopah, and Goldfield. Additional land was acquired for the Lahontan flight strip in Churchill County. Material deposits were acquired for State Routes 1, 2 8A, and 18.

During the biennium a gradual increase in land values has occurred all over the State. This increase in land values has naturally resulted in a corresponding increase in the costs of rights-of-way across privately owned lands.

A tabulation showing the total acreage acquired during the biennium July 1, 1944, to June 30, 1946, for the various highway purposes, together with the total cost and the average cost per acre of the same, appears in Table No. 5 appearing elsewhere in this report.

A second tabulation showing the total acreage acquired to June 30,

1946, for all purposes, together with the total cost and the average cost per acre appears in Table No. 6.

MATERIALS TESTING AND RESEARCH

Continuation of World War II through the larger part of the 1945–1946 biennium resulted in a continued low volume of materials testing such as was shown in the last preceding biennium. The figures for the two periods are about equal. 5,196 samples were tested in the fiscal years 1945–1946, and 5,326 in the 1943–1944 period. A review of these totals for the past several bienniums is interesting, for a good correlation with the volume of highway construction is shown.

Fiscal Year	Samples Tested
1933–1934	12,473
1935–1936	15,717
1937–1938	13,718
1939–1940	9,235
1941–1942	9,282
1943–1944	5,326
1945–1946	5,196

Curtailment of construction during the war years is clearly illustrated. The drop in volume of tests during the quadrennium 1943–1946 (July 1, 1942, to June 30, 1946) from the figures for the preceding four-year period (July 1, 1938, to June 30, 1942) amounts to about 43 percent. The drop in comparison with earlier periods is considerably greater.

Percentage drop in construction actually would be much greater than corresponding drops in testing because the above tabulation includes all samples from all sources. Part of the samples originate from phases of highway work other than active construction, such as investigations of subgrade and material deposits for future construction, research projects, and maintenance operations. Also a considerable number of samples have been submitted from sources outside the Highway Department, such as Federal, State, and community projects, and construction projects of private operators.

Duties of the Materials and Research Department have been explained in earlier reports. Briefly, they include routine investigations of the physical and chemical properties of raw materials and processed products entering into highway construction, special investigations of the service behavior of the same materials, special investigation of the properties of new materials not yet generally in use, preparing reports of such investigations, writing and compiling specifications, and instruction and supervision of field personnel in charge of field tests and inspection.

One of the lesser jobs of this department is to operate the official cooperative U. S. Weather Station in Carson City. While this is a lesser duty, the readings must be taken daily every day of the year.

Special projects undertaken during the biennium included investigation of concrete structures, which in certain areas of the State showed evidence of incipient deterioration. This investigation resulted in the requirement that new concrete in such areas shall be made from a special kind of Portland cement, with the additional requirement, in some instances, that an air-entraining agent shall be added—all of

which it is hoped will result in securing permanently sound concrete.

Other special projects include a continuation of the study of sodium sulphate resistance of Portland cement mortars, and the commencement of a study to determine affects of certain aggressive solutions upon asphalt-asbestos bonded metal pipe coating.

In addition to the testing directly connected with highways, testing services were performed at a nominal charge for various Government subdivisions and agencies, and for several firms and individuals. U. S. Government projects and agencies so served included the Naval Ammunition Depot at Hawthorne, the Naval Auxiliary Air Station at Fallon, Veterans Administration Hospital at Reno, the Civil Aeronautics Administration, the Indian Service, and the U. S. Bureau of Mines. For the State of Nevada, tests were made for construction projects at the Orphans' Home, the Bureau of Mines, the Memorial Building, the Verdi Fish Hatchery, and the Prison.

Municipalities receiving the services were Carson City, Reno, Las Vegas, and Pioche. Tests made for counties were limited to tests of concrete poured in the new wing of the Washoe County Courthouse. In addition, samples were submitted by sixteen contractors and several individuals. A good many of these "outside" samples, especially during the last year, consisted of building blocks and bricks made from various types of lightweight aggregates.

No new equipment, aside from a few minor items, has been added during the biennium. A new Autoclave and length comparator, together with appropriate molds for making expansion tests of Portland cement, is needed, and probably will be added within the next few months.

Following is a list showing the kinds and quantities of samples tested in Carson City during the biennium. Job control tests made in the field laboratories are not included in the list:

TESTS FOR THE FISCAL YEARS ENDING JUNE 30, 1945–1946

Base, Surfacing and Fill Materials—

Surfacing and base (preliminary)	250
Surfacing (crushed and screened)	41
Base, Type I (roadway samples)	16
Base, Type II (crushed and screened)	5
Screenings	4
Borrow	48

Soil (Subgrade)—

Physical and chemical tests	1550

Concrete Materials—

Portland cement	57
Fine aggregates	109
Coarse aggregates	70
Concrete cylinders and cores	1548
Concrete cylinders (light weight aggregates)	6
Curing compound	1
Water for concrete	5
Premolded Expansion Joint	2

Metallic Materials—

Reinforcing steel	32
Corrugated metal pipe	173
Barbed wire	6
Copper seal	2
Reinforcing mesh	2
Sheet metal for license plates	2

Materials for Masonry, Rip Rap, Etc.—

Masonry mortar	6
Hollow concrete masonry units	137
Concrete building bricks	5
Pumice brick	1
Cinder and volcanic tuff brick	3
Experimental bricks, various light weight materials	226
Experimental cylinders made from expanded Perlite	62
Rock for rip rap	3
Building stone	3
Pumice, cinders, expanded Perlite (sieve analysis)	4

Bituminous Materials—

SC–2	9
SC–3	10
SC–4	2
MC–1	25
MC–2	34
MC–3	87
RC–2	3
Asphalt, 120–150 Pen.	11
Asphalt, 200–300 Pen.	57
Emulsified asphalt	17
Creosote	3
Bituminous treated aggregate (extractions)	40

Chemical Analyses—

White paints for timber and metals	4
Red lead paint	2
Black paint	3
Aluminum paint	2
Traffic lacquers and paints	33
Minerals	135
Water (complete anaylsis)	8
Water (special tests, Carson River)	318

Miscellaneous Materials—

Iron ore for ballast	1
Rock wool, slag wool and other insulating material	4
Lumber	2
Unclassified	7

ROADSIDE IMPROVEMENT

All work pertaining to roadside improvement, except that included in the regular design for new construction, has been discontinued.

When funds become available, there are a number of sites suitable for roadside improvement projects.

TRAFFIC AND SIGN DIVISION

This department has greatly increased its activity during the last half of this biennium, due chiefly to two reasons: First, during the fiscal year of 1944–1945 it was impossible to obtain traffic paint, and secondly, the striping program during this fiscal year was held to an absolute minimum as maintenance operations were confined to keeping up the surface in a travelable condition.

However, during the second half of this biennium as traffic paints became more plentiful and of an improved quality, a concerted effort was made to stripe as much of the State highway system as was possible during the spring and summer months. It is still impossible to obtain

the higher grade traffic lacquers, but the paint has given satisfactory results as an interim treatment until the manufacturers are able to import the tung and fossil resins which are used in the compounding of the higher quality traffic lacquers.

An expenditure of $20.96 per mile of the 1,968.2 miles striped includes labor, equipment rental, paint, freights, and supervision during the 1945–1946 biennium.

SIGNS

Due to an increase in the calls for new signs, some equipment was installed in the Reno shops to facilitate the manufacture of all types and consisted of:

Power saw and joiner for framing wood backing.

Steel shears for cutting large sheets of 16- to 26-gage iron.

New paint spray.

Vacuum applicator for attaching reflectorized fabric to steel.

A type of reflectorized fabric has been somewhat extensively used as a substitute for the more expensive reflectorized button. Many of the large reflectorized signs made up with glass buttons have been destroyed by shot gun and rifle fire, but comparatively little damage has been done to the reflectorized fabric. This fabric has also been used on snow markers, sign posts, and bridge parapets and railings and is giving far more than the anticipated reflecting properties.

Where practical the repainting and repairing of signs is being done in the field which relieves the Reno shops of much extra work.

To one who is not familiar with the various manufacturing processes that are necessary to finish the special and standard type of sign, the Reno shops are an example of a well-laid-out plan. Costs have been steadily reduced since this department was originally set up, until today all signs are made up at a substantial saving to this department.

Signs are sent out on requisition only from all Divisions, and occasionally special ones are made up for various State, county, and city agencies.

FINANCE—OPERATION

During the first half of this biennium, the highway revenue from State sources continued to recede, and it was not until after V–J day on August 14, 1945, and early in the second half of the biennium that any increase was noted. However, from this latter date until the end of the biennium, revenue from gas and use-fuel taxes, common carrier and auto licenses increased quite markedly.

The increase in gas and use-fuel taxes in the second half of the biennium amounted to $608,536.32. The increase from auto licenses and common carrier taxes amounted to $104,257.60, making a total increase from these sources over the first half of the biennium of $712,793.92.

During the next biennium it is anticipated that highway revenue will continue to increase, and it is expected that the total will amount to more than the peak years of 1941–1942.

Expenditures for highway construction during the first half of the biennium reached the lowest point seen in the past decade. This was

due to the "freezing" of practically all regular Federal aid funds, the Government releasing only money for projects essential to the war effort. During the second half, construction picked up as old Federal funds were released and new funds made available.

During the war years, even with receipts at a low ebb, the Department was able to build a fair balance which will be needed to match the greatly increased Federal aid apportionment for highways during the next few years.

Due to a reduction in highway construction it was possible to refund to the Federal Government $100,000 of the Trust Fund, which had been advanced under the Defense Highway Act of 1941. The total of this Trust Fund amounted to $600,000, of which $400,000 was refunded during the preceding biennium and there is now only $100,000 of this fund to be returned.

Tables showing receipts and disbursements for construction, maintenance, and operation are appended.

MAINTENANCE DEPARTMENT

During the period of the World War the funds that had been previously allotted for construction were discontinued, and for a three- or four-year period roads that should have been reconstructed required extraordinary maintenance on the State system, both primary and secondary. Every effort was made by the maintenance forces to keep the highways in as good a travelable condition as was possible under the handicap of old equipment and lack of personnel. However, during the last biennium it was necessary to perform extraordinary maintenance with State funds to repair the damage done during the past years of the war. This extraordinary maintenance consisted mainly of adding additional surface thickness of bituminous mixes, heavy seal and chips, and correction of drainage conditions which caused breaking up of the base and surface in many places. This work could not be performed in the ordinary maintenance operation, and in order to maintain the highways up to a standard required this extraordinary maintenance has been done in lieu of construction projects which were inaugurated during this past biennium on U S 40, 50, and 91 on the primary system and several projects on the secondary system. This new construction will materially aid the Department in providing a higher type maintenance generally throughout the State system.

The necessity for extraordinary maintenance on those sections which should have been reconstructed, the higher cost of materials, the inability to obtain adequate new equipment, and the higher wages paid to the personnel have reflected higher costs per mile than heretofore. These comparative costs are shown in Tables 15 to 31 in the Appendix.

DIVISION OPERATIONS

DIVISION NO. 1

Division 1, with headquarters in State-owned administration building, Las Vegas, includes that part of the State Highway System within Clark County and portions of Lincoln and Nye Counties, a total of 499.482 miles of improved State Highways.

A difficult war-time and postwar biennium has taught Division 1 to accept materials, equipment, supplies, and manpower shortages as normal, and improvisation and determination of accomplishment among the personnel has been gratifying.

Mine-to-market feeders, authorized under the Access Road program, were constructed between Highway 81 and the Blue Diamond Mine south of Las Vegas, from Highway 91 to Apex Quarry and Sloan, and the Charleston Boulevard by-pass, at an expenditure of $183,381.

Under regular Federal Aid, three major projects were practically completed within the biennium. These projects were a new bridge over the Muddy River near Logandale, a secondary highway to Davis Dam from Highway 95 south of Searchlight, and the Crystal to Glendale section of Highway 91. The latter job was a war hold-over and was contracted immediately upon cessation of hostilities at a cost of $744,056.91. The other two jobs were contracted for $79,502.23 and $422,096.05, respectively. All three jobs are necessary and notable improvements to the highway system in Division 1.

Besides attempting normal maintenance under adverse working conditions several resurfacing jobs were accomplished. From Las Vegas to the Army Airfield, Las Vegas to Boulder City, and from Las Vegas to Ten Miles south emulsion and chip seal was placed to save old surfacing which had started to ravel.

Advance engineering funds in the amount of $37,575 were used in preparing for new construction within and adjacent to Las Vegas. The first of these projects, on Main Street and Bonanza Road, is almost ready to contract.

A new maintenance station of concrete brick was completed at Glendale Junction. This installation consists of a garage, equipment sheds, storehouse, pumphouse, and two dwellings, with individual garages and washhouses, completely fenced with concrete bricks. Building was done with State forces and represents an expenditure of approximately $57,000, which was greatly in excess of preliminary estimates due to rapidly rising labor and material costs.

A barracks for transient Department adminstrative employees was also constructed by State forces and is located near the Administration Building, at the Las Vegas Plant, closing building construction for the biennium in preparation for an accelerated construction and maintenance program during the next few years.

DIVISION NO. 2

Division No. 2, with headquarters in Reno, has supervision over the highway system in six counties and portions of three others; they are as follows: Churchill, Douglas, Lyon, Ormsby, Storey, and Washoe, and portions of Lander, Mineral, and Pershing Counties.

During the biennium no major construction was started in Division 2 until this year, several months after the ending of the war. Since that time four contracts have been let, one a Federal Aid Project on U S 40 from Humboldt House to Mill City in Pershing County, consisting of some new alignment, improvement in grade line, and the widening of the roadway bed with a heavy stabilized base and the placing of a 2½″ plantmix asphaltic surface for a distance of 11.574 miles. The cost of this project was $336,800. This road has been in need of improvement for years.

The other three contracts are on Federal Aid Secondary Routes and are as follows:

1. In the Scheckler District, near Fallon in Churchill County, a county road has been rebuilt by widening, raising and the placing of 2½" of roadmix asphaltic surface for a distance of 6.59 miles. Also, embodied in this contract is the building of five timber bridges over the river and canals. This project cost approximately $189,750.

2. In Dalzell Canyon in Lyon County near Wellington and Central, a contract is under way for the building of a new road from Central and Wellington up Dalzell Canyon to the Forest Service boundary, a distance of 14.15 miles at a cost of $222,550.

3. The other Federal aid secondary contract is in Washoe County near Franktown. With a small amount of line change the old county road has been raised, widened and a roadmix asphaltic surface laid for a distance of 4.29 miles at a cost of $63,750.

During 1945 three access roads to mines were built with State Highway crews and equipment. The work consisted of grading, draining, and the placing of select material wearing surface. The roads were as follows:

1. Mason to Western Nevada mine in Lyon County, a distance of 3 miles.

2. Road to the Blue Metal mine in Douglas County, north and west of Yerington, approximately 3 miles in length.

3. Road to Fluftrok Corporation mine in Mineral County. The road started in Lyon County near the Morgan ranch, which is located approximately 30 miles south of Yerington, and extends for a distance of 23.2 miles to the mine in Mineral County.

Besides the regular maintenance for the past two years, the maintenance crews have placed many miles of premix asphaltic material upon existing surface which had become badly raveled and checked due to the heavy trucking during the war. The thickness of this secondary work varies from 1" to 2".

Due to the light snowfall of the past two years no difficulty in removal has been encountered.

DIVISION NO. 3

Division No. 3, with headquarters in Elko, includes that part of the State Highway System in Humboldt County, and portions of Pershing, Lander, Eureka, and Elko Counties, a total mileage of 645 miles.

Construction in Division 3 during the biennium was curtailed to a great extent due to war conditions; however, five contracts were let during the period, with one hold-over from 1943, at an approximate cost of $1,055,314.14, consisting of 51.855 miles. Three were completed and three were incomplete on July 1, 1946.

The construction of a steel and timber bridge over the Humboldt River on State Route 20 at Palisade, Nevada, was started in October 1945 and completed in November 1945 at a cost of $13,843.

A contract for the construction of a road from the Junction of U S 40 near Golconda to 4.84 miles northeast on State Route 18, consisting of a 26-foot gravel surface, with wood and concrete structures, was awarded August 16, 1944, and completed June 9, 1945, at the cost of $84,767.

On June 8, 1946, a contract was awarded to build a portion of U S 40

from approximately 9.3 miles east of Battle Mountain to 0.8 miles west of the Eureka-Lander County line. This work consists of reconstructing present highway and construction on a new alignment by grading the road bed to a width of 40 feet, installing and extending structures, placing gravel base courses, and constructing plantmix surface with roadmix shoulders over a length of 10.325 miles at a bid price of $313,511.02.

A contract also awarded on June 8, 1946, was for the construction of a portion of Route 8A, between the junction of U S 95, 31 miles north of Winnemucca, and Sod House, in Humboldt County. This work consists of construction of roadbed, placing gravel base courses, installing drainage structures, and laying a roadmix surface width of 26 feet wide. This job is 14.941 miles long, and is to be built for $165,558.93.

The State Highway Department awarded a contract on June 14, 1946, for the building of a portion of State Route 46 and F. A. S. 572 from Elko to approximately 12 miles southeast toward Lamoille. This work consists of construction of the roadbed, 26 feet wide shoulder to shoulder, placing a gravel base course, installing drainage structures for a length of 11.934 miles. This work will cost $144,630.85.

A hold-over contract awarded in December 1943 for the building of a section of road on U S 40 from a point 6 miles east of Elko to ½ mile east of the North Fork bridge at a cost of $333,003.34, covers reconstruction, partly by widening on present road to 40 feet shoulder to shoulder, and partly on new alignment, placing gravel base courses, installing structures, and placing a plantmix bituminous surface with roadmix shoulders for a length of 9.815 miles.

In addition to our regular maintenance activities, considerable work, such as placing additional wearing surface over a good part of U S 40 was completed.

In the past year we have had many surface failures, especially between 1.6 miles east of Vivian and Elko on U S 40. This surface was badly cracked when winter set in, moisture penetrated and froze the surface which started to ravel at an alarming rate. This surface was repaired by patching all small holes by hand, and large breaks repaired by hauling pit-run gravel material and mixing over the old surface, then applying about ⅓ gallon of SC–3 road oil and screenings.

Maintenance equipment in the division has been increased and improved during the biennium by the replacement of four small trucks, the addition of two motor patrols, one four-wheel-drive truck, one compressor, and two 300-gallon asphalt kettles.

DIVISION NO. 4

The biennium 1944 to 1946 marked the end of the war and the beginning of the postwar period, two distinct and opposite conditions in both highway construction and maintenance.

In the first period, July 1, 1944, to September 1, 1945, there was no new or reconstruction on either the primary or secondary systems in this division; however, during this period one 62-mile access road was constructed in Eureka County from the Mt. Hope lead-zinc mine to Palisade. Work was performed by day labor forces using both State-owned maintenance equipment and privately owned rented equipment. During the second period, September 1, 1945, to June 30, 1946, the postwar highway construction program was launched.

CONSTRUCTION

Three contracts were awarded in Division 4 prior to June 30, 1946, but no work was in progress as of that date. Contracts awarded are as follows:

1. White Pine County, Contract No. 669—17.67 miles on State Route No. 2, U S 50–93, McGill north to Magnuson's Ranch. This section will be constructed on new alignment with a 32-foot roadmixed bituminous surface, shoulder to shoulder, and flat fill and cut slopes. One of the oldest sections in this division will be retired when this contract is completed.
2. Lander County, Contract No. 673—38.45 miles on State Route 8A, Austin to a point approximately 38.45 miles north of Austin, Nevada. This section is also on the Federal Aid Secondary System and will be constructed with a 24-foot roadway section, graveled shoulder to shoulder, 6 : 1 and 4 : 1 ditch section and flat back slopes and fill slopes.
3. Eureka County, Contract No. 674—20.23 miles on State Route 20A, Junction with U S 50 west of Eureka, Nevada, to Garden Pass. This section is also on the Federal Aid Secondary System and will have a 24-foot roadway section with gravel surface, shoulder to shoulder, 6 : 1 or 4 : 1 ditch section and flat back slopes and fill slopes.

MAINTENANCE

During the first part of the biennium, maintenance was hampered by the lack of equipment, material, and manpower, especially the latter. Several of the outlying sections were either discontinued or worked with one man. The extra crew which operates from East Ely headquarters was reduced approximately 50%. This together with the lack of materials and equipment made it impossible to carry on a complete and fully rounded-out maintenance program. Only the "musts" were attempted; however, with the return of the veterans after V–J day, additional men were hired and personnel was gradually increased to normal so that all phases of maintenance could be carried on simultaneously. By the end of the biennium, sufficient personnel was on the pay roll to keep the power shovel, motor patrols, oiling equipment, and other maintenance equipment all going at the same time. In addition to the above, a two-man crew was assigned to revamp, replace, and repaint all highway signs and to paint maintenance buildings throughout the Division.

On March 1, 1946, the Highway Department adopted a forty-hour week for all maintenance employees. This necessitated the hiring of additional men in order to take advantage of the short oiling and construction season as found throughout this Division.

By increasing the headquarters mechanical force, all Division 4 equipment has been put in from fair to good condition. Five 1½-ton dump trucks, one large Mack tractor truck with low bed trailer and 3,200 gallon oil tanker, two motor patrols, one scoopmobile, one pickup, one Etnyre 1,200-gallon asphaltic distributor, one Walter 4-wheel-drive truck with blade snow plow and side wing snow plow, three 300-gallon maintenance distributors, three F. W. D. trucks with snow plows, and one highway material spreader were purchased new during the biennium. The equipment situation for Division 4 at the close of the

biennium was excellent, although parts continue to be hard to secure.

Snow removal, always a major winter problem, in this division was carried out with the regular maintenance personnel. Snow fall during the winters of 1944–1945 and 1945–1946 was about normal with all roads kept open for traffic at all times. Snow-removal equipment consists of 13 1½-ton trucks with blade plows, 12 4–5-ton 4-wheel-drive trucks with blade and V plows, one Snogo, 5 motor patrols, one tractor with dozer, and eleven sanders which can be attached to the rear of the 1½-ton trucks when it becomes necessary to sand icy sections.

Three floods of considerable magnitude occurred on U S 50 during the biennium; one at Devil's Gate 12 miles west of Eureka; the second in the flat between Little Antelope Summit and Pancake Summit, and the third in the vicinity of Boone Springs, 75 miles northeast of Ely. The first two were in the late winter, caused by the rapid melting of snow on frozen ground, while the washouts at Boone Springs were the result of a cloudburst. In all cases repairs were made by the East Ely extra crew and the regular maintenance crew assigned to the section. With the exception of an hour or two at Devil's Gate, traffic was not delayed due to any of the floods.

DIVISION NO. 5

Divison No. 5, with headquarters in State-owned Division office building in Tonopah, includes the part of the State Highway System within Esmeralda County, and portions of Nye and Mineral Counties, a total of 567.11 miles of constructed highway.

The only contract work in this Division during the biennium was the construction of a surface treatment on 70.83 miles of the following sections: from the California-Nevada State line to 4 miles west of Millers on Highway U S 6, and from 2 miles south of Beatty to ¾ mile north of Springdale on Highway U S 95.

This work consisted of placing one-fifth of a gallon of 200–300 penetration asphalt and 12 pounds of screenings per square yard, and was completed at a contract cost of $55,392, which figure included 1,427 tons of screenings placed in stockpiles by the contractor.

During the biennium State forces remixed 1½ miles of oil surface on State Route 23 north of Gabbs, seal coated some 46 miles at various places throughout the Division, and placed 20 miles of heavy seal and screenings south and east of Tonopah and on the Goldfield summit.

State forces also widened and straightened the road from State Route 23 near the Gabbs townsite to the Brucite mine at a cost of $1,734.

Cloudburst damage during 1944 amounted to only $712, while during 1945 the same item amounted to $6,254. Some $3,500 of this amount was spent on State Route 8A a few miles south of the Manhattan Junction where cloudbursts occurred twice during the summer. Some $1,300 was spent on State Route 3A in Fish Lake Valley, and the balance in small amounts at various points throughout the Division.

Some $2,350 was spent repairing cloudburst damage to the water pipe line from Trail Canyon to Basalt. This 5-inch pipe line was broken and washed out in several places, and considerable lengths of it was filled with sand at each break.

Snow removal costs were light during the past biennium, amounting to only $6,254 for the two years. Most of this cost was for stand-by rental charges on the snow-removal equipment.

Two stone buildings, both old school buildings, were purchased in Goldfield by the Department. One, known as the Sun Dog school, a large two-story building, was purchased for $1,000. $5,342 was spent in razing this building and transporting the stone, lumber, etc., to Tonopah where it will be used on constructing new Division shop and office buildings. The other, known as the West Side school, a one-story stone building about 50 x 55 feet, was purchased for $1,900. Some $1,500 have been expended in converting this building into a maintenance garage, with the main garage a room some 32 x 50 feet with concrete floor and three small rooms for parts, supplies, etc.

New equipment received in this Division during the biennium consisted of several new heavy-duty 4-wheel-drive trucks with snow plows, one diesel motor patrol, one power roller, and a heavy duty tractor truck with a 20-ton low-bed semitrailer.

General maintenance operations were curtailed somewhat due to a shortage of experienced and efficient manpower. However, this condition has corrected itself during the past year, and at present operations are on about a normal basis except for the shortage of building materials which is holding up the construction of needed maintenance facilities at several locations.

EQUIPMENT DIVISION

The biennium beginning July 1, 1944, and ending June 30, 1946, saw very little new construction at the Reno Plant or at the five division shops. It was a period of maintenance, both as regards buildings and equipment.

During the war period we were unable to purchase new equipment for replacements and were forced to keep the equipment we had in working order long after its normal useful life had passed.

The construction of access roads, necessitated by war conditions, with our maintenance equipment required overhauls to equipment that in normal times would have been replaced. The splendid morale of the personnel of the repair shops made it possible to do the job that was required.

The war's end saw very little change as new equipment parts and tires have been hard to acquire; however, at present the equipment picture is becoming better and the manufacturers are beginning to get their products into the hands of Nevada dealers.

The department operates 704 units located as follows:

Division No. 1, Las Vegas	64
Division No. 2, Reno	195
Division No. 3, Elko	115
Division No. 4, Ely	132
Division No. 5, Tonopah	87
Construction	68
Headquarters	31
Reno Plant	12

Equipment purchased during the biennium, and which includes equipment ordered prior to the war, is as follows:

6 Sedans.
10 Pickups.
16 1–1½ Ton Trucks.
3 2–3 Ton Trucks.
19 4–6 Ton Trucks.
8 Motor patrols.
4 Mowers.
2 1,250-gallon distributors
9 300-gallon distributors.
3 Oil tanks—Trailers.
4 Pulvi-mixers.
2 Heaters.
1 Compressor.
4 Spreaders
3 Rollers.
3 Conveyors.
4 Loaders.
3 Low-bed trailers.
33 Snow Plows.

A new degreasing unit for cleaning engine parts was purchased and installed at the Reno Plant early this year. The unit consists of a vat in which is placed a chemical solution, which is electrically heated to the point where it is vaporized. The parts from the engine to be repaired are lowered into the vapor and the chemical action renders the grease and other accumulations soluble and easily removed. The unit is a great saver of time.

All buildings and structures have been properly maintained.

DRIVER'S LICENSE DIVISION

It is a fact well recognized by those whose duty it is to study and analyze the cause and prevention of traffic accidents, that proper driver licensing is the best means of improving the condition. Through the licensing of drivers, an opportunity is afforded for the education of drivers in traffic laws and safe driving practices, for the enforcement of penalties assessed by the courts, for the elimination of those who, because of physical or mental deficiencies, are not capable of operating a motor vehicle in a safe manner, and the withdrawal of the driving privilege from those who, because of a bad driving record, have forfeited their right to operate a motor vehicle.

In the past biennium, the Driver's License Division has, therefore, directed a great deal of its attention toward the education of the driver, the correction of common bad driving habits and practices and the removal from the highway of those who, because of their dangerous driving, are a menace to the traveling public. One of the principal remedies suggested at the Highway Traffic Safety Conference called by the President of the United States in May 1946 for the reduction of the inexcusable traffic toll, was emphasis on proper driver licensing. This includes not only a thorough examination at the time the license is issued, to demonstrate that the driver has the ability and the experience necessary to operate a motor vehicle safely, but also to maintain an accurate record of his driving so that proper action can be taken when such record indicates that his driving is becoming unsafe.

Since the Driver's License Division went into operation in July 1941, approximately 200,000 drivers' licenses have been issued. The law required that licenses be issued to all drivers who applied within the first three months without an examination unless there was reason to believe that the applicant was not capable of operating a motor vehicle safely. Therefore, approximately 50,000 drivers obtained licenses without having to take any examination. They have not been required to

take one since unless they, as drivers, have been involved in an accident or convicted of a moving traffic violation, or because of physical or mental impairment.

From July 1, 1944, to June 30, 1946, a total of 73,146 licenses were issued. (See Table No. 43.) For the preceding biennium 68,424 licenses were issued. The increase in number of licenses issued for the biennium ending June 30, 1946, probably is due to the population increase in the State. Original licenses issued in the first six months of 1946 exceeded any like six-month period, except when the Driver's License Act went into effect in 1941.

The Division has issued approximately 1,300 suspension, cancellation, and revocation orders. Of this number, approximately 53% are orders of revocation, which means that the privilege to operate a motor vehicle is withdrawn from the person for a period of at least one year. It should also be noted that of the total number of revocation orders issued, 92% are for the offense of operating a motor vehicle while under the influence of intoxicating liquor, or what is commonly known as "drunken driving."

During the biennium 240 licenses were revoked as compared with 286 for the preceding biennium. However, suspensions increased from 165 in the previous biennium to 254 for the biennium ending June 30, 1946. (See Table No. 45.)

It is commonly agreed that a drunken driver is the greatest menace on the road, and it is, of course, impossible to determine how many accidents have been prevented, or lives saved, as a result of the revocation of the driving privilege of this large number of drunken drivers. Since all of the courts in the State are required, by law, to report traffic convictions to the Driver's License Division, whether the conviction be under State law or county or city ordinance, it is possible for the Division to maintain a complete record of each driver's violations. When it appears that a driver's attitude or ability are such that he should not be permitted to operate a motor vehicle, the appropriate action is taken in accordance with the record.

Accident records are also forwarded to the Division to be included in the driver's record. Since the Department has been in existence, some 14,700 accident and violation records have been received and filed in Carson City. This is an average of approximately 250 per month for the entire period. This accident record is also taken into consideration in determining the fitness of a driver to operate a vehicle. In the five-year period the maintenance of such records indicates very clearly that there is a small percentage of the drivers who are violation and accident prone. The Department has attempted, by examination, to find out the cause of such undesirable driving tendencies, and to correct what driving faults or erroneous driving attitudes are responsible for these records.

The longer the Driver's License Division is in operation, the more apparent it becomes that the reporting of all accidents and violations and the maintaining of driver records in one central agency is the only possible way to enforce driving regulations and to carry into effect any worth while safety measure. Any decentralization of drivers' licensing activity merely means the defeat of the purpose for which driver licensing should exist.

During the war years when the conservation of tires and cars was

vital, the Office of Price Administration was advised of convictions for offenses which tended to waste or destroy these materials. A total of 3,109 violations were reported to them for their guidance in the issuance for car, tire, and gasoline certificates.

The Division has done a great amount of work in driver education in the public schools. As a result of such efforts, the State Board of Education has recommended that a driver education course be included in the regular curriculum of all high schools in the State, receiving such attention and credit as other regular courses of study. It is believed that most of the high schools, in the coming school year, will be actively engaged in the teaching of such program. The value of this type of training has been demonstrated in undeniable terms in cities and States where it has been in operation for a sufficient length of time to record the results. In certain States where fleet truck and car operations have been given careful study, it has been demonstrated that by merely giving the standard test for procuring a license the accident ratio can be cut from between 25% to 35%.

All of the States now have a Driver's License Act with the exception of two. Reciprocal reporting of accidents and violations is being practiced by all of the States having a Driver's License Act, and enables each State to maintain a complete record of its own residents or licensees. There are drivers who feel that once they are away from their home State they can drive without regard to any thought of safety and will experience complete immunity both insofar as violations or negligent accidents are concerned because they are nonresidents. The agreements among the States to report all such violations and accidents is bringing the public to realize that a motorist, no matter where he may be driving, is still responsible insofar as observing all safety practices and abiding by all laws. He is far more careful to observe these when he knows that the violation will eventually be placed in his record in the State of his residence.

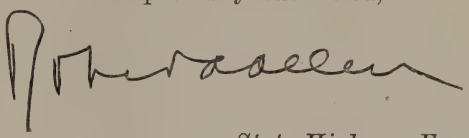
The Driver's License Division in the biennium distributed some 30,000 safe driving handbooks, approximately 13,000 safe driving notices which accompanied original and renewal licenses, and conducted more than 50,000 examinations.

The rate of failure on examinations amounts to 53.5% on the applicant's first attempt. Most of these are able, after study of the laws and safe driving practices, to obtain a license. The fact that such a large percentage of failures occur indicates that there is a decided lack of knowledge on the part of the motoring public regarding the proper operation of a motor vehicle. The requiring of this number of people to study the laws and safe driving practices is an educational process within itself, and is reaching a group of adults that cannot be reached through our public school system.

This State, along with all others in the country, is experiencing a rapid rise in traffic accidents and fatalities. Such rise will probably continue until most of the motor vehicles now in operation are replaced by those in a better state of repair. The rapid rise also indicates that still more effort is necessary on the part of all agencies, including the public schools, to attempt to curb the useless slaughter of the citizens

of this country. It also indicates that enforcement agencies, courts, and drivers' licensing departments must also invoke greater restrictions and penalties if there is to be a reduction.

Respectfully submitted,



State Highway Engineer.

APPENDIX

TABLE SHOWING EFFECT OF PUBLIC LAND GRANTS TO NEVADA

Amount of grant.

Acres	*Dollars	Property tax return to State provided entire grant sold, based on assessed valuation $1.60 per acre and State tax rate of 60 cents.	Difference in State taxes received and additional matching funds required.	Federal-aid highway fund matching ratio.	Federal funds available based on 1944 Federal-aid Highway Act.	State matching funds required.	Additional State funds required to match Federal funds.	Difference in combined property tax return and additional highway matching funds required.	Federal funds lost to State if additional State funds not available.	State gas tax required to raise State matching funds, based on 1941 gas sales of approximately 42 million gallons.	Total sale value, based on $1.25 per acre (present price of State lands).
None	38,400	169,573	8.67	82.67	4,850,523	1,016,809	207,973	41,573	823,637	4.0	5,000,000
4,000,000	115,200	555,443	9.31	79.84	4,850,523	1,224,782	670,643	171,443	921,739	4.5	15,000,000
12,000,000	153,600	776,326	9.69	74.19	4,850,523	1,387,452	929,926	264,326	1,311,022	5.6	20,000,000
16,000,000	443,753	3,389,961	13.82	71.36	4,850,523	1,346,735	3,833,714	1,910,785	3,833,714	6.2	57,780,336
All				50.00	4,850,523	4,850,523				13.1	

Amount of grant.

Acres	*Dollars	Property tax return to State provided entire grant sold, based on assessed valuation $1.60 per acre and State tax rate of 60 cents.	Difference in State taxes received and additional matching funds required.	Property tax return to counties provided entire grant sold, based on assessed valuation of $1.60 per acre and county tax rate of $2.	Combined property tax return to State and counties provided entire grant sold. Based on assessed valuation of $1.60 and rate of $2.60.	Difference in combined property tax return and additional highway matching funds required.	Assessed valuation per acre necessary to return combined property taxes equal to additional highway matching funds required.	Based on a carrying capacity of 20 cows per square mile and a five-month grazing season—cost per cow month if land assessed at amount necessary to return combined State and county taxes equal to additional highway matching funds required. Tax rate $2.60 per hundred.	Dollars
4,000,000	38,400	169,573	8.67	128,000	166,400	41,573	2.00	4.0	0.333
12,000,000	115,200	555,443	9.31	384,000	499,200	171,443	2.15	4.5	0.358
16,000,000	153,600	776,326	9.69	512,000	665,600	264,326	2.24	5.6	0.373
All	443,753	3,389,961	13.82	1,479,176	1,922,929	1,910,785	3.19	6.2	0.531

Present Status—Unappropriated unreserved public lands and nontaxable Indian lands—46,224,269 acres.
*Assessed valuation of $1.60 per acre is State-wide average for 3,479,377 acres of railroad land. (Nevada Tax Commission reports).

TABLE NO. 1
STATEMENT OF RECEIPTS

Classification	1917–1944	1945	1946	Total	Percentage
Legislative appropriation	$40,000.00	.....	.....	$40,000.00	.04
State tax levy	1,869,468.87	.....	.....	1,869,468.87	2.05
Auto license fees (net)	3,712,179.05	$309,583.98	$342,270.76	4,364,033.79	4.78
Gasoline and use fuel tax (gross)	18,823,403.79	1,301,771.95	1,910,308.27	22,035,484.01	24.12
Common carrier license	3,184,015.06	400,386.91	471,957.73	4,056,359.70	4.44
Driver's license	147,263.26	47,886.79	32,871.43	228,021.48	.25
Certificate of title	44,509.05	.....	.....	44,509.05	.05
Racing commission fees	147,428.86	.....	.....	147,428.86	.16
Contractor's license	16,234.23	.....	.....	16,234.23	.02
Miscellaneous	964,255.96	33,095.65	39,167.36	1,036,518.97	1.13
State Highway bonds	1,900,000.00	.....	.....	1,900,000.00	2.08
Federal construction refunds	49,264,805.99	782,606.81	767,110.32	50,814,523.12	55.63
County construction refunds	4,118,085.75	.....	.....	4,118,085.75	4.51
County refunds on State maintenance	59,000.00	.....	.....	59,000.00	.06
County maintenance refunds	116,654.73	.....	.....	116,654.73	.13
Lincoln Highway Association construction refunds	71,426.60	.....	.....	71,426.60	.08
Utah-Nevada-California Association construction refunds	23,831.47	.....	.....	23,831.47	.02
San Francisco-Bay City construction refunds	25,000.00	.....	.....	25,000.00	.03
City construction refunds	212,553.41	.....	.....	212,553.41	.23
Railway-crossing construction refunds	169,088.30	.....	.....	169,088.30	.19
	$84,909,204.38	$2,875,332.09	$3,563,685.87	$91,348,222.34	100.00
Advances to State by U. S. Government—					
Deposited to National Industrial Recovery Highway Fund—Trust Account*	600,000.00	.....	.....	600,000.00	
Deposited to Trust Account Defense Highway Act of 1941†	600,000.00	.....	.....	600,000.00	
	$86,109,204.38	$2,875,332.09	$3,563,685.87	$92,548,222.34	

*This advance has been repaid to U. S. Government.
†$500,000 of this advance has been repaid to U. S. Government.

TABLE NO. 2
STATEMENT OF DISBURSEMENTS

Classification	1917–1944	1945	1946	Total	Percentage
Highway construction	$60,229,251.09	$951,827.95	$1,451,620.13	$62,632,699.17	70.44
Surveys, plans, rights of way, and preliminary engineering	3,375,009.90	77,989.62	155,458.84	3,608,458.36	4.06
Maintenance	12,110,525.39	773,778.26	855,194.89	13,739,498.54	15.45
County maintenance	114,846.29	.....	.....	114,846.29	.13
Equipment division and plants	1,464,389.31	130,384.29	256,993.77	1,851,767.37	2.08
Maintenance buildings	117,975.06	7,098.83	66,859.67	191,933.56	.22
Accounts receivable	863,507.71	33,706.16	30,979.54	928,193.41	1.04
Section "31" refunds	40,107.17	.....	.....	40,107.17	.05
County highway bond redemption	232,168.01	.....	.....	232,168.01	.26
Laboratory building	21,642.18	.....	.....	21,642.18	.02
General administration	2,135,008.53	135,853.31	161,136.12	2,431,997.96	2.74
Highway bulletin and publicity	59,103.55	.....	5,013.89	64,117.44	.07
Road information	17,135.08	2,645.75	1,972.73	21,753.56	.02
Landscape-architect department	15,097.01	.....	.....	15,097.01	.02
Roadside improvement	4,528.48	49.54	171.89	4,749.91	.01
Special highway traffic count	89,459.35	10,154.42	10,671.52	110,285.29	.12
Safety division	35,103.22	.....	.....	35,103.22	.04
Traffic and sign department (headquarters)	43,293.74	5,315.99	8,043.57	56,653.30	.06
Sign division (Reno)	131,014.29	20,740.85	6,672.00	158,427.14	.18
Pavement striping	76,629.20	26,331.87	41,254.10	144,215.17	.16
Driver's license division	151,374.67	37,124.35	39,378.68	227,877.70	.26
Police patrol (highway)	341,623.60	.....	.....	341,623.60	.38
Common carrier license expense	85,905.09	.....	.....	85,905.09	.10
Public service commission inspectors	163,297.73	45,487.53	50,999.45	259,784.71	.29
Common carrier and truck refunds	21,549.15	4,609.50	552.56	26,711.21	.03
Gasoline tax refunds	1,159,045.74	150,777.17	164,953.82	1,474,776.73	1.66
Gasoline tax administration	44,769.41	7,985.66	7,983.35	60,738.42	.07
Use fuel tax administration	23,885.91	4,479.14	5,420.79	33,785.84	.04
	$83,167,245.86	$2,426,340.19	$3,321,331.31	$88,914,917.36	100.00
Transfer to Revolving Fund	52,452.02	.....	.....	52,452.02	
Transfer to U. S. Treasurer from National Industrial Recovery Highway Fund—Trust Account	600,000.00	.....	.....	600,000.00	
Transfer to U. S. Treasurer from Trust Account—Defense Highway Act of 1941	400,000.00	.....	100,000.00	500,000.00	
	$84,219,697.88	$2,426,340.19	$3,421,331.31	$90,067,369.38	

Reconcilement—	
Total receipts	$92,548,222.34
Total disbursements	90,067,369.38
State Highway balance July 1, 1946*	$2,480,852.96
Lists filed July 5, 1946, included in disbursements	403,914.45
State Controller's balance July 1, 1946†	$2,884,767.41
State Highway balance (Highway Fund)*	$2,389,389.25
State Highway balance (Trust Account)	91,463.71
	$2,480,852.96
State Controller's balance (Highway Fund)†	$2,793,303.70
State Controller's balance (Trust Account)	91,463.71
	$2,884,767.41

TABLE NO. 6
TOTAL LANDS ACQUIRED TO JUNE 30, 1946, FOR ALL PURPOSES

Rights of way for Route No.	Acres		Total private and Government (acres)	Total cost through private land	Average Cost Per Acre	
	Private	Government			Private	All land
1	7,068.36	8,807.10	15,875.46	$119,043.57	$16.84	$7.50
1A	111.99	1,309.91	1,421.90	100.00	0.89	0.07
1B	744.71	554.71	1,299.42	2,949.70	3.96	2.27
2	868.82	11,661.54	12,530.36	30,761.98	35.41	2.45
2A	525.09	1,704.95	2,230.04	1,415.54	2.70	0.63
2B	128.46	444.50	572.96	380.00	2.96	0.66
3	1,399.21	6,068.14	7,467.35	69,349.72	49.56	9.29
3A	89.69	1,095.24	1,184.93			
4	240.67	7,299.44	7,540.11	156.00	0.65	0.02
5	3,447.60	10,930.57	14,378.17	26,905.69	7.80	1.87
6	416.51	6,390.49	6,807.00	11,170.43	26.82	1.64
7	654.83	10,014.54	10,669.37	5,167.69	7.89	0.48
8	277.21	2,913.02	3,190.23	1,305.03	4.71	0.41
8A	209.86	5,890.93	6,100.79	1,836.99	8.75	0.30
8B	88.23	531.34	619.57			
9	193.02	157.31	350.33	7,845.20	40.64	22.39
10	11.29	541.30	552.59	100.00	8.86	0.18
11	144.95	477.02	621.97	786.64	5.43	1.26
11A	25.13	.....	25.13	1,650.00	65.66	65.66
12	80.42	189.36	269.78			
13	398.83	5,572.57	5,971.40	1,077.27	2.70	0.18
14	36.44	919.22	955.66	255.42	7.01	0.27
15	7.20	1,051.28	1,058.48			
17	225.44	414.61	640.05	7,926.00	35.16	12.38
18A	38.68	143.19	181.87	20.00	0.52	0.11
19	23.14	9.83	32.97			
20	.....	285.50	285.50			
21	52.66	.....	52.66	116.00	2.20	2.20
21B	15.67	.....	15.67			
22	19.95	277.26	297.21			
23	19.38	3,026.76	3,046.14			
24	4.79	6,107.08	6,111.87			
26	.....	133.15	133.15			
27	30.47	.....	30.47	950.00	31.18	31.18
29	.....	802.51	802.51			
32	17.60	.....	17.60			
33	270.82	370.64	641.46	212.90	0.79	0.33
36	12.23	.....	12.23			
37	76.60	.....	76.60	1,367.00	17.85	17.85
38	43.50	301.66	345.16	820.00	18.85	2.38
41	13.86	217.30	231.16			
43	407.18	602.03	1,009.21	940.00	2.31	0.93

44	81.66	120.90	202.56			
46	93.44	241.05	334.49	171.34	1.83	0.51
47	0.50	971.40	971.90			
48	14.34	----------	14.34			
53	6.94	322.37	329.31			
58	----------	597.05	597.05			
59	11.92	----------	11.92			
60	----------	544.47	544.47			
61	12.79	----------	12.79			
62	15.21	----------	15.21			
65	5.61	----------	5.61			
67	0.67	----------	0.67			
69	----------	244.17	244.17			
Subtotals	18,683.57	100,257.41	118,940.98	$294,780.11	$15.78	$2.48
For feeder roads	111.24	261.96	373.20	1,670.00	15.01	4.47
Subtotals (all rights of way)	18,794.81	100,519.37	119,314.18	$296,450.11	$15.77	$2.48
Maintenance sites	398.67	----------	398.67	15,416.00	38.67	38.67
Flight strips	738.34	1,820.15	2,558.49	1,380.75	1.87	0.54
Material deposits	423.14	22,150.49	22,573.63	1,360.22	3.21	0.06
Totals (all lands)	20,354.96	124,490.01	144,844.97	$314,607.08	$15.46	$2.17

TABLE NO. 3
STATEMENT OF RECEIPTS AND DISBURSEMENTS FOR THE PERIOD JULY 1, 1944, TO JUNE 30, 1946

RECEIPTS	1945	1946	Total	Percentage
Federal aid	$782,606.81	$767,110.32	$1,549,717.13	24.07
Miscellaneous	33,095.65	39,167.36	72,263.01	1.12
Gasoline and use fuel tax (gross)	1,301,771.95	1,910,308.27	3,212,080.22	49.88
Auto license fees (net)	309,583.98	342,270.76	651,854.74	10.12
Common carrier license	400,386.91	471,957.73	872,344.64	13.55
Driver's license	47,886.79	32,871.43	80,758.22	1.26
	$2,875,332.09	$3,563,685.87	$6,439,017.96	100.00
DISBURSEMENTS				
General administration	$135,853.31	$161,136.12	$296,989.43	5.17
Special traffic surveys	10,154.42	10,671.52	20,825.94	.36
Road information	2,645.75	1,972.73	4,618.48	.08
Roadside improvement	49.54	171.89	221.43	
Highway bulletin and publicity		5,013.89	5,013.89	.09
Traffic and sign department (headquarters)	5,315.99	8,043.57	13,359.56	.23
Sign department (Reno)	20,740.85	6,672.00	27,412.85	.48
Pavement striping	26,331.87	41,254.10	67,585.97	1.18
Driver's license division	37,124.35	39,378.68	76,503.03	1.33
Public service commission inspectors	45,487.53	50,999.45	96,486.98	1.68
Common carrier license refunds	4,609.50	552.56	5,162.06	.09
Gasoline tax refunds	150,777.17	164,953.82	315,730.99	5.49
Gasoline tax administration	7,985.66	7,983.35	15,969.01	.28
Use fuel tax administration	4,479.14	5,420.79	9,899.93	.17
Maintenance	773,778.26	855,194.89	1,628,973.15	28.34
Surveys, plans, rights of way, etc.	77,989.62	155,458.84	233,448.46	4.06
Equipment division and plants	130,384.29	256,993.77	387,378.06	6.74
Maintenance buildings	7,098.83	66,859.67	73,958.50	1.29
Highway construction	951,827.95	1,451,620.13	2,403,448.08	41.82
Miscellaneous	33,706.16	30,979.54	64,685.70	1.12
	$2,426,340.19	$3,321,331.31	$5,747,671.50	100.00

TABLE NO. 4
FEDERAL AID ALLOTMENTS

1921 and prior	$3,527,276.18
1922	953,436.78
1923	635,624.52
1924	826,360.27
1925	947,623.25
1926	956,576.00
1927	948,318.00
1928	948,510.00
1929	957,995.00
1930 Regular	960,375.00
1930 Public lands	588,914.00
1931 Regular	1,601,408.00
1931 Unused portion Hawaii allotment	4,288.00
1931 Advance	904,961.83
1932 Regular	1,598,987.00
1932 Public lands	440,683.00
1933 Regular	1,421,688.63
1933 Emergency	1,575,756.00
1934 National recovery	5,675,875.00
1935 National recovery	2,844,481.00
1936 Regular	1,595,501.00
1936 Public lands	553,135.00
1936 Works program highway	2,243,074.00
1936 Works program grade crossing elimination	887,260.00
1937 Regular	1,593,978.00
1938 Regular	1,632,385.00
1938 Secondary highways	326,477.00
1938 Grade crossing elimination	250,000.00
1938 Public lands	560,201.00
1939 Regular	1,590,172.00
1939 Secondary highways	318,034.00
1939 Grade crossings	243,750.00
1939 Public lands	559,895.00
1940 Regular	1,275,938.00
1940 Secondary highways	191,391.00
1940 Grade crossings	97,500.00
1940 Public lands	212,442.00
1940 Regular (reapportioned from other States)	6,718.00
1940 Secondary (reapportioned from other States)	690.00
1940 Grade crossing (reapportioned from other States)	781.00
1941 Regular	1,462,071.00
1941 Secondary highways	190,705.00
1941 Grade crossings	146,250.00
1941 Public lands	218,031.00
1941 Regular (reapportioned from Georgia)	4,919.00
1941 Secondary (reapportioned from Georgia)	738.00
1941 Grade crossing (reapportioned from Georgia)	358.00
1942 Regular	1,274,718.00
1942 Secondary	223,076.00
1942 Grade crossings	97,500.00
1942 Public lands	207,128.00
1943 Regular	1,275,386.00
1943 Secondary	223,193.00
1943 Grade crossing	97,500.00
1943 Strategic net	318,847.00
1943 Advance engineering	127,539.00
1946 Regular	2,868,043.00
1946 Secondary	1,921,867.00
1946 Urban	60,613.00
Subtotal	$53,176,941.46

Other Federal Funds Utilized

Access funds	$1,960,120.90
Flight strips (general)	568,375.03
Flight strips (special)	629,621.09
Subtotal	$3,158,117.02
Total	$56,335,058.48

TABLE NO. 5

LANDS ACQUIRED FROM JULY 1, 1944, TO JUNE 30, 1946

1. For Rights of Way—State Highways

Route No.	Acres: Private	Acres: Government	Total private and Government (acres)	Total cost through private land	Average Cost Per Acre: Private	Average Cost Per Acre: All land
1	564.44	99.53	663.97	$13,239.53	$23.46	$19.94
2	25.44	12.24	37.68	4,783.10	188.01	126.94
2B	.....	2.14	2.14			
3	8.57	149.22	157.79			
5	35.95	.....	35.95			
6	23.17	.....	23.17	2,025.00	87.40	87.40
8A	35.88	1,665.72	1,701.60			
9	.....	12.49	12.49			
11A	13.21	.....	13.21	1,650.00	124.91	124.91
12	1.31	.....	1.31			
14	.....	37.98	37.98			
20	.....	285.50	285.50			
22	19.95	277.26	297.21			
23	.....	1,470.91	1,470.91			
46	30.53	147.34	177.87	31.34	1.03	.18
Totals	758.45	4,160.33	4,918.78	$21,728.97	$28.65	$4.42

2. For Rights of Way—Feeder Roads

County	Location	Acres	Cost
Douglas	Minden Airport	0.14—Private	
Humboldt	Winnemucca Airport	2.68—Government	
Ormsby	Prison Road	7.85—Private	
Washoe	Holcomb and Huffaker Lanes	0.26—Private	
Washoe	Franktown Lane	0.70—Private	
		8.95—Private	
		2.68—Government	
	Totals	11.63	

3. For Maintenance Sites

County	Location	Acres	Cost
Clark	Glendale	3.96—Private	$70.00
Esmeralda	Tonopah	8.37—Private	
Esmeralda	Goldfield	0.87—Private	1,900.00
	Totals	13.20—Private	$1,970.00

4. For Flight Strips

County	Location	Acres	Cost
Lyon	Lahontan	411.58—Government	
	Totals	411.58—Government	

5. For Material Deposits

County	Location	Acres	Cost
Churchill	State Route 2	147.16—Private	$903.57
Humboldt	State Route 18	120.00—Government	
Lander	State Route 8A	40.00—Government	
Pershing	State Route 1	20.00—Government	
Washoe	State Route 1	20.00—Government	
		147.16—Private	$903.57
		200.00—Government	
	Totals	347.16	$903.57

TABLE NO. 7

SURVEYS—JULY 1, 1944, TO JUNE 30, 1946

County	Miles
Clark	21.84
Churchill	17.27
Douglas	29.49
Elko	47.02
Esmeralda	0.45
Eureka	5.60
Humboldt	14.96
Lander	.50
Lincoln	26.43
Lyon	14.83
Mineral	------
Nye	1.33
Ormsby	5.50
Pershing	10.07
Storey	------
Washoe	38.16
White Pine	44.83
Total	278.28

Cost per mile of surveys, July 1, 1944, to June 30, 1946 ..... $446.14

TABLE NO. 8

PLANS COMPLETED, JULY 1, 1944, TO JUNE 30, 1946

County	Construction and reconstruction (miles)	Bituminous surface only (miles)	Bridges (number)
Churchill	6.589	----------	5
Clark	33.374	----------	2
Douglas	4.426	----------	4
Elko	18.382		
Esmeralda	----------	42.367	
Eureka	33.632	----------	8
Humboldt	20.623		
Lander	58.159	----------	1
Lyon	14.149	----------	2
Mineral	----------	15.531	
Nye	----------	12.932	
Ormsby	1.700		
Pershing	16.725		
Washoe	4.292		
White Pine	17.667		
	229.718	70.830	22

Total cost, plans and estimates, roadway and bridges $168,082.31
Cost per mile 559.25

TABLE NO. 9

BRIDGE AND GRADE SEPARATION SUMMARY

Structures Built by State Highway Department

Type	Completed or under construction as of June 30, 1944	Completed during biennium or under construction at close of biennium June 30, 1946	Structures abandoned during biennium	Total as of June 30, 1946	Structures on State highway system not built by State Highway Department	Total structures as of June 30, 1946
Plain concrete	4	0	0	4	1	5
Reinforced concrete	69	4	0	73	2	75
Structural steel	27	1	0	28	10	38
Timber	58	6	0	64	23	87
Composite structures (reinforced concrete and structural steel)	11	0	0	11	0	11
Total	169	11	0	180	36	216
Total length of structures in feet	15,559	961	0	16,520	2,701	19,221

TABLE NO. 10

DESCRIPTION OF FEDERAL AID ROUTES, JUNE 30, 1946

F. A. Road No.	Termini	Mileage[1]
1	From the California-Nevada State line southwest of Verdi via Reno, Fernley, Lovelock, Winnemucca, Battle Mountain, Elko and Wells to the Nevada-Utah State line at Wendover, Utah	417.509
2	From the California-Nevada State line southwest of Spooner via Carson City, Dayton, Leeteville, Fallon, Austin, Eureka, and Ely to a junction with Federal Aid Road No. 1 near Wendover, Utah	468.137
3	From the California-Nevada State line south of Holbrook via Minden to a point on Federal Aid Road No. 2 approximately three miles south of Carson City, and from another point on Federal Aid Road No. 2 in Carson City via Reno to the Nevada-California State line northwest of Reno with a spur connection from a point near the south city limits of Reno via Wells Avenue to a junction with Federal Aid Road No. 1 in Reno	81.618
4	From the California-Nevada State line southwest of Basalt via Basalt, Coaldale and Tonopah to a point on Federal Aid Road No. 2 in Ely, and from another point on Federal Aid Road No. 2 in East Ely via Connor's Pass and Sacramento Pass to the Nevada-Utah State line enroute to Delta, Utah	305.723
5	From the California-Nevada State line southwest of Jean via Jean to the south city limits of Las Vegas, and via Fifth Street in Las Vegas to Glendale, thence to the Nevada-Arizona State line northeast of Mesquite with an alternate route through Las Vegas via Main St.	130.541
6	From the California-Nevada State line south of Searchlight via Searchlight and Railroad Pass to a point on Federal Aid Road No. 5 alternate at Fremont Avenue and Main Street in Las Vegas, and from a point on Federal Aid Road No. 5 at North Fifth Street and Bonanza Road in Las Vegas via Beatty and Goldfield to a point on Federal Aid Road No. 4 in Tonopah, and from a point on Federal Aid Road No. 4 at Coaldale via Mina, Hawthorne and Schurz to a point on Federal Aid Road No. 2 in Fallon, and from a point on Federal Aid Road No. 2 at Leeteville via Hazen to a point on Federal Aid Road No. 1 near Fernley, and from a point on Federal Aid Road No. 1 in Winnemucca via Orovada to the Nevada-Oregon State line at McDermitt with an alternate route through Las Vegas from the intersection of Charleston Boulevard and Fremont Avenue via Charleston Boulevard and Tonopah Drive to the intersection of Tonopah Drive and Bonanza Road, and with a spur from Railroad Pass via Boulder City to the Nevada-Arizona State line at Boulder Dam	526.790
7	From Caliente via Pioche to a point on Federal Aid Road No. 4 at the east foot of Connor's Pass, and from a point on Federal Aid Road No. 2 approximately five miles south of the Elko-White Pine County line via Currie, Wells and Contact to the Nevada-Idaho State line northeast of Contact	252.684
8	From a point on Federal Aid Road No. 7 approximately one mile west of Panaca via Panaca to the Nevada-Utah State line enroute to Modena, Utah	20.932
Total		2,203.934

SUMMARY FEDERAL AID SYSTEM

Mileage by Types as of June 30, 1946

Types	Mileage[1]
(A) Primitive	0.349
(B) Unimproved	16.689
(E) Gravel	20.932
(G) Mixed bituminous	2,104.050
(H) Bituminous penetration	20.039
(I) Bituminous concrete	23.071
(J) Portland cement concrete	7.230
(M) Dual-bituminous and cement concrete	11.574
Total	2,203.934

[1]Surveyed mileage used on roads having unimproved sections.

TABLE NO. 11

CONTRACTS AWARDED BY STATE JULY 1, 1944, TO JUNE 30, 1945

Contract No.	County	Length miles	Type construction	Termini	Bid amount	Route
655	Humboldt	4.84	Gravel (incls. Conc. and steel bridge)	Jct. U. S. 40 near Golconda to Jct. Getchell mine road	$82,406.63	18
656	Clark	15.40	Blading, gravel and roadmix	Jct. U. S. 91 near Arden to Blue Diamond mine	61,078.00	Access
657	Washoe	14.30	Additional plantmix surface	Reno to Washoe Summit	46,834.75	3
658	Mineral, Nye, and Esmeralda	70.83	Applying seal coat and screenings	Calif.-Nevada State line to 4 miles west of Millers 2 miles south of Beatty to ¾ mi. N. of Springdale	57,112.50	3 & 5

CONTRACTS AWARDED BY STATE JULY 1, 1945, TO JUNE 30, 1946

659	Washoe	11.72	Repair and resurface (Roadmix)	Jct. U. S. 40 at Wadsworth to Sutcliffe at Pyramid Lake	7,974.00	34
660	Eureka	0.023	Timber bridge and approaches	Timber bridge at Palisade	12,756.00	20
661	Clark	14.53	Plantmix (incls. two bridges)	Crystal to one mile south of Glendale	744,056.91	6
662	Churchill	6.59	Roadmix (incls. five bridges)	Sheckler Lane road to Jct. U. S. 50 west of Fallon	189,734.39	FAS
663	Clark	18.84	Roadmix	Jct. U. S. 95 one mile north of State line to Davis Dam	422,096.05	77
664	Lyon	14.15	Roadmix (incls. two bridges)	Dalzell Canyon to Jct. SR 3 near Central, spur to Wellington	222,550.05	22
666	Pershing	11.57	Plantmix	Humboldt House to Mill City	336,809.79	1 (U S 40)
667	Washoe	4.29	Roadmix	Jct. U. S. 395 near Franktown to Jct. U. S. 395, 3 miles southeast Franktown	63,747.59	FAS
668	Lander	10.33	Plantmix	9.3 miles east Battle Mountain to 0.8 mile west Lander-Eureka County line	313,511.02	1 (U S 40)
669	White Pine	17.67	Plantmix	McGill to Magnuson's	270,970.45	2 (U S 50)
670	Humboldt	14.94	Roadmix	Jct. U. S. 95, 31 miles north Winnemucca to Sod House	165,558.93	8A
671	Elko	11.93	Gravel	Elko to 12 miles southeast toward Lamoille	144,630.85	46 & FAS
672	Elko	6.45	Plantmix	Moor to west foot of Pequop Summit	258,522.88	1 (U S 40)

TABLE NO. 12

CONSTRUCTION AUTHORIZATION AND DAY LABOR PROJECTS, JULY 1, 1944, TO JUNE 30, 1945

Construction authorization	Day labor No.	Length miles	County	Type construction	Location	Amount authorized
736	302	.35	Washoe	Draining swamp area	¾ mile to ½ mile south of Huffakers	$1,500.00
737	303	17.00	Washoe	Seal coat and screenings (various sections)	Nevada - California line to Washoe-Lyon County line	10,000.76
738	304	14.30	Washoe	Reconditioning shoulders with bituminous material	Reno to Washoe Summit	4,616.80
739	305	0.71	Ormsby	1½-inch additional roadmix surfacing	Carson City north to south city limits (portion)	3,725.01
740	306	0.25	Washoe	Reconditioning underpass	West Second Street in Reno	1,000.00
741	307	1.70	Lyon	Mine access road	Mason to Western Nevada Mine	3,800.00
743	309		Clark	Construct garage and appurtenances	Glendale Maintenance Sta.	11,500.00
746			White Pine	Repairs maintenance foreman's house	Ferguson Springs	1,045.66
747	310	2.40	Clark	Mine access road (roadmix)	U. S. 91 to Sloan and Apex to Calcium Carbonate Deposit	18,500.00
748	311	2.70	Eureka	Mine access road (gravel)	Eureka to Richmond-Eureka Mine	13,420.00
749	312	2.50	Lyon-Douglas	Mine access road (blading)	17 miles west of Yerington to Blue Metal Claims	1,650.00
750	313	23.2	Lyon-Mineral	Mine access road (blade select material)	30 miles south of Yerington to perlite deposit	16,400.00
751	314		Lyon	Installing 36-inch concrete pipe	At Weeks, canal near S. P. R. R.	525.00
752	315		Clark	Advance engineering studies	Various in Clark County	37,575.00
753	316		Eureka	Installing battery 4-36-inch culverts	At Beowawe (alleviate flood conditions)	1,500.00
754	317	1.40	Nye	Mine access road	Gabbs to Basic Refractories, Inc. Mine	2,550.00
757			Esmeralda	Salvage schoolhouse building for construction of division office, Tonopah	Sun Dog school building, Goldfield	5,000.00

TABLE NO. 13

CONSTRUCTION AUTHORIZATION AND DAY LABOR PROJECTS, JULY 1, 1945, TO JUNE 30, 1946

Construction authorization	Day labor No.	Length miles	County	Type construction	Location	Amount authorized
759	319	6.00	Washoe	Seal coat and screenings	California line to Derby (various sections)	$3,806.62
760	320	8.00	Washoe	Seal coat and screenings	Lakeview Summit to Reno	5,086.49
761	321		Washoe	Bituminous resurfacing (2"x24' roadmix)	Vista to Derby (portions)	23,471.36
762	322	8.00	White Pine	Seal and chips	Ely to east foot of Connor's Pass (portions)	2,800.00
763	323	18.00	White Pine	Seal and chips	White Pine - Eureka County line to Ely (portions)	5,400.00
764	324	0.73	Ormsby	1½ inch additional roadmix surfacing	Carson City south to north city limits (portions)	4,673.25
765	325		Eureka	Construct cattle guard	Near Beowawe (refunded by county)	800.00
766	326		Churchill	1½ inch plantmix wearing surface	City of Fallon (Williams Ave., Main, and Center Streets)	6,935.00
767	327		Ormsby	Bituminous resurfacing—6 blocks	Around Capitol grounds in Carson City	2,000.00
768	328		Washoe	Installing guard rail	Vista to Clark's Station	3,200.00
769	329	5.00	Churchill	Reconditioning surface—Route 23	Jct. U. S. 50 to Churchill-Mineral County line (portions)	6,400.00
770	330		Esmeralda	Repairing road and water pipe	Basalt Maintenance Station	2,200.00
771	331		Clark	Well and constructing maintenance building and fence	Glendale Maintenance Sta.	57,238.50
772	332		Washoe	Constructing concrete cut-off wall and catch basin	Pyramid Lake Road-Culvert No. 253	600.00
773	333	18.79	Humboldt-Lander-Eureka	Reconditioning surface	Division III portions Routes 8, 8B, 11, 43, U. S. 40, and 93	20,773.00
774	334	61.00	Eureka	Maintenance on 61 miles road for P.R.A.	Garden Pass to Palisade (Federal funds)	10,000.00
775			Ormsby	Purchase and erect Quonset Hut	Division II—Maintenance garage—Carson City	2,000.00
776	335		Lincoln	Construct barbed wire fence	Near Panaca Jct. to 2,640 feet north	550.00
777			Ormsby	Purchase and erect two Quonset Huts	At Headquarters in Carson	8,975.00
778			Churchill	Purchase and erect Quonset Hut	At Fallon Maintenance Yards	4,000.00
779	336		White Pine	Seal and chips	East foot of Connor's Pass to Ely	4,220.00

TABLE NO. 13—*Continued*

Construction authorization	Day labor No.	Length miles	County	Type construction	Location	Amount authorized
780			Esmeralda	Convert school building to garage	West Side school building—Goldfield	1,500.00
781	337		Eureka	Repair winter damage to roadway	½ mile west of Primeaux to 2 miles east of Summit	5,880.00
782			Ormsby	Furnish and erect Quonset Hut	At Headquarters in Carson City	5,700.00
783	338		Nye	Cinders and roadmix	SR 4-C2-Black Rock Summit to Sandy Summit	2,400.00
784	339	15.15	Esmeralda-Nye	Seal and screenings	Rtes. 3, 4, and 5—Various sections	9,390.00
785	340	2.46	White Pine	Placing 3 inch gravel and roadmixing	Little Antelope Summit	11,223.00
786	341	2.25	Eureka	Leveling, resurfacing, widening shoulders	5 miles west of Eureka to 7¼ miles west	8,351.75
787	342	1.40	Elko	Bituminous resurfacing	Sections at Halleck and Deeth	4,998.60
788	343	3.00	Douglas	Reconditioning surface; 2 inch additional surface	Glenbrook Summit to Spooners	9,136.00
790	345	2.31	Pershing-Humboldt	Bituminous resurfacing	.33 mile west of Pershing-Humboldt County line to Winnemucca	3,251.25
791	346	0.19	Elko	Reconditioning surface	5th St. Elko to Lamoille Rd.	753.75
792	347	0.19	Elko	Install underdrain-resurface 2"x38' & 40' roadmix	Deeth to Wells (portion)	2,596.60
793	348	3.55	Elko	Reconditioning surface and seal coat	3 miles north of Wells to Thousand Springs Creek	8,379.40
794	349	2.01	White Pine	Seal and chips	2 miles west of Moorman's ranch to Moorman's ranch	1,097.36
795	350	8.00	White Pine	Seal and chips	Connor's Pass to 8 miles east	3,505.17
796	351	6.11	Elko	Seal and chips	Welcome to Wells (portion)	4,558.00
797	352	10.00	White Pine	Seal and chips	Eureka-White Pine County line to 10 miles east	5,290.00
798	353	0.34	Humboldt	Retread resurfacing	Orovada to Oregon State line (portions)	1,522.55
799	354	0.37	Humboldt	Retread resurfacing	Winnemucca to Paradise Hill (portions)	1,517.75

TABLE NO. 14

CONSTRUCTION AND RECONSTRUCTION COMPLETED AND UNDER CONSTRUCTION ON THE DESIGNATED STATE HIGHWAY SYSTEM AT THE CLOSE OF THE BIENNIUM.

Type	Miles new construction completed during biennium	Miles reconstruction completed during biennium	Miles new highway under construction at close of biennium	Miles reconstruction not yet completed at close of biennium	Totals
Gravel	-------	-------	16.77	-------	16.77
Roadmix	15.40	82.55*	58.81	-------	156.76
Plantmix	-------	14.30†	-------	60.55	74.85
Totals	15.40	96.85	75.58	60.55	248.38

*Includes 70.83 miles of placing additional surfacing only.
†Placing additional surfacing only.

TABLE NO. 15

MAINTENANCE COSTS FROM 1918–1946

	Mileage			Mileage	
1918	-------	$16,596.54	1933	2,151.64	566,845.41
1919	-------	29,330.21	1934	2,287.37	502,715.66
1920	-------	44,323.34	1935	2,524.77	617,784.47
1921	-------	33,601.26	1936	2,656.68	675,726.06
1922	-------	61,997.55	1937	2,697.82	846,033.35
1923	442.98	110,724.87	1938	2,770.20	756,305.26
1924	765.23	122,788.60	1939	2,805.90	830,877.69
1925	903.90	215,168.70	1940	2,908.48	763,075.33
1926	1,213.43	306,899.52	1941	2,941.22	774,573.50
1927	1,445.08	343,399.28	1942	3,015.76	848,789.57
1928	1,680.73	359,262.08	1943	3,047.80	745,480.25
1929	1,875.16	418,065.08	1944	3,084.67	703,340.85
1930	1,905.43	500,752.46	1945	3,081.740	773,778.26
1931*	2,061.34	301,166.64	1946	3,093.242	855,194.89
1932	2,113.02	618,377.41			

*Seven months' expenditures, December 1, 1939, to June 30, 1931. Starting during the fiscal year 1933 and continuing through 1934, the maintenance crews worked and were paid for five days a week only.

TABLE NO. 16

SNOW REMOVAL COSTS, 1923–1946*

1923	$12,695.38	1935	28,573.76
1924	884.53	1936	50,948.37
1925	1,479.13	1937	131,066.03
1926	1,803.43	1938	59,468.88
1927	8,228.95	1939	71,681.97
1928	3,167.50	1940	42,403.61
1929	16,172.05	1941	57,008.71
1930	19,466.28	1942	87,357.42
1931	4,711.45	1943	60,386.97
1932	83,632.96	1944	94,585.25
1933	83,497.61	1945	103,521.25
1934	8,227.13	1946	104,222.71

*Snow removal costs prior to 1923 not available.

TABLE NO. 17

MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE FISCAL YEAR ENDING JUNE 30, 1945

Type of road construction	Mileage	Expenditures
Roadmix bituminous-treated gravel	2,385.708	$542,432.92
Plantmix bituminous-treated gravel	412.324	108,073.02
Graded and drained	136.000	18,610.13
Unimproved	2.060	140.98
Gravel	90.480	18,678.82
Dual	.074	36.77
Bituminous penetration retread	10.194	5,203.64
Portland cement concrete	6.604	4,343.79
Bituminous concrete	34.010	30,830.05
Bituminous surface-treated	4.286	1,406.97
Subtotal		$729,757.09
Bridge maintenance		6,495.56
Additions and betterments*		24,834.74
		$761,087.39
Administration		12,690.87
	3,081.740	$773,778.26

*Comprising the following items:

Repairs to deck—Bridge No. 200	$936.98
Seal coat	8,130.58
Seal coat and chips	15,767.18
	$24,834.74

Average cost per mile $251.08

TABLE NO. 18

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS PENETRATION RETREAD SURFACE, PORTLAND CEMENT CONCRETE AND BITUMINOUS CONCRETE ROADS, FISCAL YEAR ENDING JUNE 30, 1945.

Operation	Bituminous penetration retread surface	Portland cement concrete	Bituminous concrete
Building and repairing shoulders	$275.22	$1,026.11	$4,062.78
Filling expansion joints and cracks and patching surfaces	1,311.83	931.51	6,973.30
Cleaning ditches and culverts	156.12	53.73	5,087.68
Cutting weeds and brush	343.29	431.12	2,102.72
Dragging and blading		.09	
Repairing surface ditches	335.98		5.30
Signs and markers	29.87	8.41	1,016.11
Removing slides and trimming slopes	.77	246.33	1,634.81
Washouts	95.14	27.43	503.57
Hauling and spreading patching material		2.79	
Snow removal		134.92	1,254.65
Guard rail	4.60	138.68	277.85
Riprapping and protecting slopes			841.05
Removing debris and waste material along right of way	86.27	253.03	533.13
Building and repairing culverts		3.04	154.24
Reconditioning	1,755.87		322.58
Building and repairing fences and gates on right of way	31.88		631.61
Painting traffic center line		31.24	
Snow fence		.06	
Maintenance houses, A/C	43.44	294.19	279.09
Seal coating	5.05	179.54	3,745.26
New road approaches		9.70	216.44
Landscape	420.43	422.07	598.33
Flattening slopes			127.39
Sanding icy roads		20.75	189.27
Rental of garages, storage sheds, etc	307.88	67.85	272.89
Parks		61.20	
Administration	90.54	75.58	535.40
	$5,294.18	$4,419.37	$31,365.45

TABLE NO. 19

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON ROADMIXED BITUMINOUS-TREATED GRAVEL, PLANTMIXED BITUMINOUS-TREATED GRAVEL, AND DUAL TYPE SURFACE ROADS, FISCAL YEAR ENDING JUNE 30, 1945.

Operation	Roadmix	Plantmix	Dual type surface
Building and repairing shoulders	$81,533.23	$8,235.34	$0.29
Filling expansion joints and cracks and patching surfaces	117,471.59	22,743.75	10.61
Cleaning ditches and culverts	12,218.90	3,909.44	10.21
Cutting weeds and brush	60,218.73	11,156.14	.33
Dragging and blading	878.31	415.44	
Repairing surface ditches	8,218.40	360.23	
Raking rocks	72.40	44.61	
Signs and markers	10,415.09	2,804.75	
Removing slides and trimming slopes	18,417.42	9,414.47	.07
Washouts	14,966.94	1,499.54	
Hauling and spreading patching material	211.76	91.76	
Snow removal	73,318.81	11,745.45	
Guard rail	1,432.55	1,244.43	.42
Riprapping and protecting slopes	1,540.81	1,239.26	
Removing debris and waste material along right of way	13,044.66	1,989.09	
Building and repairing culverts	1,564.32	8.67	
Reconditioning	18,291.32	3,012.20	13.12
Building and repairing fences and gates on right of way	352.76	321.94	
Painting traffic center line	1,217.05	180.85	
Snow fence	794.02	85.41	
Sand fence	27.53		
Maintenance houses, A/C	26,901.97	3,395.89	.46
Seal coating	21,044.92	14,937.42	
New road approaches	350.21	21.10	
Landscape	4,492.24	3,398.42	.31
Flattening slopes	4,451.07	36.40	
Sanding icy roads	7,097.56	2,027.95	
Rental of garages, storage, sheds, etc.	3,824.14	939.19	.48
Parks	1,543.21		
Administration	9,432.97	1,880.04	.63
	$531,865.89	$109,953.06	$37.49

TABLE NO. 20

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS SURFACE TREATED ROAD, UNIMPROVED ROAD, AND GRAVEL ROAD, FISCAL YEAR ENDING JUNE 30, 1945.

Operation	Bituminous surface-treated road	Unimproved road	Gravel road
Building and repairing shoulders	$70.69	$39.10	$117.91
Filling expansion joints and cracks and patching surfaces	434.40		220.34
Cleaning ditches and culverts	4.06		3,515.50
Cutting weeds and brush	87.27	191.88	71.39
Dragging and blading			4,060.24
Repairing surface ditches			18.84
Raking rocks			47.30
Signs and markers			211.26
Removing slides and trimming slopes			2,125.60
Washouts			366.39
Hauling and spreading patching material			5,593.74
Snow removal			1,787.27
Guard rail	20.67		333.52
Riprapping and protecting slopes	1.79		50.35
Removing debris and waste material along right of way	191.92		2.28
Building and repairing culverts	27.48		
Snow fence			4.05
Maintenance houses, A/C	165.94		4.03
Seal coating			8.66
Landscape	231.50		
Sanding icy roads			67.73
Rental of garages, storage sheds, etc.	118.55		28.32
Administration	24.48	2.44	324.99
	$1,431.45	$143.42	$19,003.81

TABLE NO. 21

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON GRADED AND DRAINED ROADS, FISCAL YEAR ENDING JUNE 30, 1945.

Operation	Graded and drained road
Building and repairing shoulders	$80.55
Filling expansion joints and cracks and patching surface	130.43
Cleaning ditches and culverts	407.14
Cutting weeds and brush	479.07
Dragging and blading	10,271.29
Repairing surface ditches	114.21
Raking rocks	257.19
Signs and markers	329.08
Removing slides and trimming slopes	253.02
Washouts	1,039.59
Hauling and spreading patching material	2,007.38
Snow removal	1,382.32
Riprapping and protecting slopes	49.11
Removing debris and waste material along right of way	112.94
Building and repairing culverts	33.98
Maintenance houses, A/C	1,661.34
Sanding icy roads	1.50
Administration	323.80
	$18,933.93

TABLE NO. 22

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BRIDGES, FISCAL YEAR ENDING JUNE 30, 1945

	Amount	Percent
Channel work	$1,296.79	20.0
Substructure—General repairs	295.71	4.6
Substructure—Painting	53.62	0.1
Superstructure—General repairs	789.71	12.3
Superstructure—Painting	1,707.49	26.2
Repairs to bridge surface	167.70	2.6
Approaches—General repairs and surfacing	176.02	2.7
Approaches—Guard rail	748.34	12.2
Supplementary maintenance, including lighting, pumping system, etc.	718.17	11.0
Inspection	542.01	8.3
	$6,495.56	100.0

TABLE NO. 23

TOTAL EXPENDITURES FOR MAINTENANCE AND BETTERMENT WORK IN EACH COUNTY, FISCAL YEAR ENDING JUNE 30, 1945

	Mileage	Expenditures
Churchill	172.52	$43,981.55
Clark	339.48	114,780.13
Douglas	92.43	29,859.33
Elko	423.26	115,787.71
Esmeralda	216.30	36,381.73
Eureka	77.63	26,828.02
Humboldt	153.23	25,889.08
Lander	166.18	22,688.98
Lincoln	206.78	59,935.77
Lyon	158.04	25,768.45
Mineral	141.48	25,795.52
Nye	368.34	65,683.76
Ormsby	27.97	9,682.94
Pershing	86.36	13,892.42
Storey	9.55	6,235.67
Washoe	164.92	87,863.64
White Pine	277.27	62,732.56
Totals	3,081.74	$773,787.26

TABLE NO. 24

MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE, FISCAL YEAR ENDING JUNE 30, 1946

Type of road construction	Mileage	Expenditures
Roadmix bituminous-treated gravel	2,314.652	$596,151.59
Plantmixed bituminous-treated gravel	449.643	131,331.84
Graded and drained	52.679	4,587.74
Unimproved	44.400	6,679.94
Gravel	129.098	34,510.13
Dual	17.955	8,803.08
Bituminous penetration retread	23.534	13,702.98
Portland cement concrete	7.996	5,816.33
Bituminous concrete	22.912	12,124.56
Bituminous surface-treated	30.373	5,694.68
Subtotal	.....	$819,402.87
Bridge maintenance	.....	4,634.44
Additions and betterments	.....	16,993.93
		$841,031.24
Administration	.....	14,163.65
	3,093.242	$855,194.89

Average cost per mile, $276.47.

TABLE NO. 25

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS PENETRATION RETREAD SURFACE, PORTLAND CEMENT CONCRETE AND BITUMINOUS CONCRETE ROADS, FISCAL YEAR ENDING JUNE 30, 1946.

Operation	Bituminous penetration retread surface	Portland cement concrete	Bituminous concrete
Building and repairing shoulders	$440.28	$135.25	$1,715.36
Filling expansion joints and cracks and patching surfaces	5,525.45	1,236.33	1,353.30
Cleaning ditches and culverts	567.60	591.04	1,528.65
Cutting weeds and brush	2,147.99	263.99	1,314.50
Dragging and blading	1.37	.12	11.04
Repairing surface ditches	51.37	22.44	247.87
Raking rocks	.08	.33	.34
Signs and markers	1,140.82	563.50	504.54
Removing slides and trimming slopes	231.51	340.98	663.57
Washouts	226.12	16.58	86.11
Hauling and spreading patching material	1.44	1.99	4.66
Snow removal	141.98	79.97	997.48
Guard rail	25.63	22.58	62.16
Riprapping and protecting slopes	16.16	8.83	16.34
Removing debris and waste material along right of way	811.61	115.12	526.98
Building and repairing culverts	.....	.11	1.95
Reconditioning	861.47	38.95	2.57
Building and repairing fences and gates on right of way	6.71	.32	444.53
Painting traffic center ilne	42.22	.90	
Snow fence	.....	2.61	133.54
Maintenance houses, A/C	285.26	986.79	1,021.14
Seal coating	23.06	*5.03*	
New road approaches	.....	.26	1.30
Landscape	704.01	1,143.21	748.30
Flattening slopes	9.68	24.81	36.89
Sanding icy roads	11.00	22.93	289.98
Rental of garages, storage sheds, etc.	409.37	114.10	321.36
Parks	20.79	87.32	90.10
Administration	236.86	100.54	209.58
Totals	$13,939.84	$5,916.87	$12,334.14

Italic figures denote credit.

TABLE NO. 26

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON ROADMIXED BITUMINOUS-TREATED GRAVEL, PLANTMIXED BITUMINOUS-TREATED GRAVEL, AND DUAL TYPE SURFACE ROADS, FISCAL YEAR ENDING JUNE 30, 1946.

Operation	Roadmix	Plantmix	Dual type surface
Building and repairing shoulders	$79,934.06	$11,129.27	$462.58
Filling expansion joints and cracks and patching surfaces	151,808.83	38,151.99	2,844.09
Cleaning ditches and culverts	31,599.66	12,339.25	715.89
Cutting weeds and brush	63,998.26	14,460.81	1,459.30
Dragging and blading	309.29	34.72	1.64
Repairing surface ditches	1,178.65	162.10	37.43
Raking rocks	87.24	50.35	
Signs and markers	27,726.66	8,089.89	776.67
Removing slides and trimming slopes	31,030.96	8,545.46	168.00
Washouts	32,293.02	3,312.58	257.81
Hauling and spreading patching material	427.02	14.92	
Snow removal	70,024.57	8,199.73	120.61
Guard rail	1,222.95	457.02	1.80
Riprapping and protecting slopes	2,167.14	224.56	13.97
Removing debris and waste materials along right of way	14,591.81	4,011.27	1,091.90
Building and repairing culverts	1,669.80	253.52	38.12
Reconditioning	13,590.51	1,271.94	111.64
Building and repairing fences and gates on right of way	845.84	1,613.34	51.23
Painting traffic center line	598.92	181.39	52.26
Snow fence	2,513.92	1,768.21	5.10
Sand fence	131.70		
Maintenance houses, A/C	28,893.34	6,651.36	110.32
Seal coating	17,396.87	1,409.50	150.20
New road approaches	146.97	149.97	20.38
Landscape	3,773.00	4,366.97	226.40
Flattening slopes	2,663.45	618.70	2.74
Sanding icy roads	8,754.77	2,235.55	17.75
Rental of garages, storage sheds, etc.	5,360.04	964.59	65.25
Parks	1,412.34	662.88	
Administration	10,304.69	2,270.11	152.16
Totals	$606,456.28	$133,601.95	$8,955.24

TABLE NO. 27

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BITUMINOUS SURFACE TREATED ROAD, UNIMPROVED ROAD, AND GRAVEL ROAD, FISCAL YEAR ENDING JUNE 30, 1946.

Operation	Bituminous surface-treated road	Unimproved road	Gravel road
Building and repairing shoulders	$1,612.67	----------	$91.83
Filling expansion joints and cracks and patching surfaces	1,944.89	$1.68	62.42
Cleaning ditches and culverts	165.30	25.79	3,390.24
Cutting weeds and brush	720.85	95.78	423.78
Dragging and blading	----------	2,336.22	11,974.98
Repairing surface ditches	----------	33.83	27.90
Raking rocks	----------	897.17	1,858.86
Signs and markers	58.09	138.87	586.10
Removing slides and trimming slopes	52.51	67.62	1,643.24
Washouts	91.32	783.44	2,995.15
Hauling and spreading patching material	----------	1,080.22	3,371.58
Snow removal	293.04	497.16	5,670.39
Guard rail	22.91		
Riprapping and protecting slopes	----------	280.47	317.75
Removing debris and waste material along right of way	32.12	74.92	66.22
Building and repairing culverts	----------	----------	30.38
Reconditioning	----------	----------	40.84
Maintenance houses, A/C	----------	278.66	1,850.40
Seal coating	700.98		
Sanding icy roads	----------	88.11	72.67
Rental of garages, storage sheds, etc.	----------	----------	35.40
Administration	98.43	115.46	596.52
Totals	$5,793.11	$6,795.40	$35,106.65

TABLE NO. 28

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON GRADED AND DRAINED ROAD, FISCAL YEAR ENDING JUNE 30, 1946.

Operation	Graded and drained road
Building and repairing shoulders	$221.03
Filling expansion joints and cracks and patching surfaces	254.32
Cleaning ditches and culverts	22.16
Cutting weeds and brush	281.66
Dragging and blading	2,600.87
Removing slides and trimming slopes	106.19
Washouts	294.80
Hauling and spreading patching material	279.19
Snow removal	496.10
Removing debris and waste materials along right of way	6.77
Maintenance houses, A/C	10.04
Sanding icy roads	14.61
Administration	79.30
Total	$4,667.04

TABLE NO. 29

EXPENDITURES FOR VARIOUS MAINTENANCE OPERATIONS ON BRIDGES, FISCAL YEAR ENDING JUNE 30, 1946

Operation	Amount	Percent
Channel work	$1,000.22	21.58
Substructure—General repairs	164.76	3.56
Superstructure—General repairs	808.62	17.45
Superstructure—Painting	878.56	18.96
Repair to bridge surface	120.47	2.60
Approaches—General repairs and surfacing	70.47	1.52
Approaches—Guard rail	48.89	1.05
Supplementary maintenance, including lighting, pumping system, etc.	1,313.52	28.34
Inspection	228.93	4.94
	$4,634.44	100.00

TABLE NO. 30
TOTAL EXPENDITURES FOR MAINTENANCE AND BETTERMENT WORK IN EACH COUNTY, FISCAL YEAR ENDING JUNE 30, 1946

	Mileage	Expenditures
Churchill	188.395	$40,484.90
Clark	339.515	111,946.95
Douglas	76.949	34,962.25
Elko	429.559	145,648.39
Esmeralda	215.775	49,070.55
Eureka	77.741	30,006.60
Humboldt	158.067	36,447.52
Lander	166.134	25,590.09
Lincoln	207.359	36,487.09
Lyon	158.100	36,130.08
Mineral	144.157	32,181.64
Nye	365.205	85,493.01
Ormsby	27.971	10,086.31
Pershing	86.772	13,305.34
Storey	9.544	5,970.84
Washoe	164.817	101,457.72
White Pine	277.182	59,925.61
	3,093.242	$855,194.89

The total mileage includes improved and unimproved types of road and the total cost includes all direct and indirect charges to maintenance.

TABLE NO. 31
MAINTENANCE MILEAGE AND EXPENDITURES BY ROAD TYPE, FISCAL YEAR ENDING JUNE 30, 1946

Type of road construction	Mileage	Expenditures
Roadmix bituminous-treated gravel	2,314.652	$596,151.59
Plantmixed bituminous-treated gravel	449.643	131,331.84
Graded and drained	52.679	4,587.74
Unimproved	44.400	6,679.94
Gravel	129.098	34,510.13
Dual	17.955	8,803.08
Bituminous penetration retread	23.534	13,702.98
Portland cement concrete	7.996	5,816.33
Bituminous concrete	22.912	12,124.56
Bituminous surface-treated	30.373	5,694.68
Subtotal	.....	$819,402.87
Bridge maintenance	.....	4,634.44
Additions and betterments	.....	16,993.93
		$841,031.24
Administration	.....	14,163.65
	3,093.242	$855,194.89

Average cost per mile, $276.47.

TABLE NO. 32

TABLE SHOWING PROGRESS STATUS OF MILEAGE ON THE FEDERAL AID HIGHWAY SYSTEM, FEDERAL AID SECONDARY HIGHWAY SYSTEM, REMAINING STATE HIGHWAYS NOT ON THE FEDERAL AID SYSTEMS, AND THE ENTIRE STATE SYSTEM AS OF DECEMBER 31, 1945.

	FEDERAL AID SYSTEM*			FEDERAL AID SECONDARY SYSTEM*						
				On State Highway System			Not on State Highway System			
County	Improved	Not improved	Total	Improved	Not improved	Total	Improved	Not improved	Total	Total mileage on FAS system
Churchill	152.12	-------	152.12	34.10	9.60	43.70	5.10	26.80	31.90	75.60
Clark	277.30	0.35	277.65	59.10	36.50	95.60	6.00	13.30	19.30	114.90
Douglas	49.88	-------	49.88	25.90	3.20	29.10	-------	29.70	29.70	58.80
Elko	331.54	-------	331.54	79.60	94.80	174.40	11.90	51.20	63.10	237.50
Esmeralda	115.87	-------	115.87	50.40	5.40	55.80	-------	-------	-------	55.80
Eureka	74.48	-------	74.48	5.50	85.00	90.00	-------	7.60	7.60	98.10
Humboldt	135.29	-------	135.29	22.70	83.50	106.20	0.30	9.50	9.80	116.00
Lander	104.03	-------	104.03	57.60	46.70	104.30	-------	23.30	23.30	127.60
Lincoln	79.03	21.97	101.00	-------	2.00	2.00	6.30	27.50	33.80	35.80
Lyon	63.59	-------	63.59	94.30	48.00	142.30	-------	23.40	23.40	165.70
Mineral	107.52	-------	107.52	36.70	26.80	63.50	-------	23.20	23.20	86.70
Nye	240.27	-------	240.27	102.90	58.50	161.40	-------	-------	-------	161.40
Ormsby	20.65	-------	20.65	3.60	2.70	6.30	-------	7.00	7.00	13.30
Pershing	75.04	-------	75.04	12.70	0.70	13.40	-------	22.10	22.10	35.50
Storey	-------	-------	-------	9.60	3.10	12.70	-------	-------	-------	12.70
Washoe	90.77	-------	90.77	65.90	50.80	116.70	0.20	41.20	41.40	158.10
White Pine	248.58	21.20	269.78	18.60	41.60	60.20	-------	84.60	84.60	144.80
Totals	2,165.96	43.52	2,209.48	679.20	598.90	1,278.10	29.80	390.40	420.20	1,698.30

	REMAINING STATE HIGHWAY SYSTEM*			ALL SYSTEMS*						
				On State Highway System			Not on State Highway System			
County	Improved	Not improved	Total	Improved	Not improved	Total	Improved	Not improved	Total	Grand total system mileage
Churchill	5.45	29.79	35.24	191.67	39.39	231.06	5.10	26.80	31.90	262.96
Clark	52.89	105.39	158.28	389.29	142.24	531.53	6.00	13.30	19.30	550.83
Douglas	0.95	9.10	10.05	76.73	12.30	89.03	-------	29.70	29.70	118.73
Elko	-------	232.27	232.27	411.14	327.07	738.21	11.90	51.20	63.10	801.31
Esmeralda	-------	76.81	76.81	166.27	82.21	248.48	-------	-------	-------	248.48
Eureka	0.09	138.71	138.80	80.07	223.71	303.78	-------	7.60	7.60	311.38
Humboldt	-------	53.82	53.82	157.99	137.32	295.31	0.30	9.50	9.80	305.11
Lander	-------	170.00	170.00	161.63	216.70	378.33	-------	23.30	23.30	401.63
Lincoln	96.36	119.30	215.66	175.39	143.27	318.66	6.30	27.50	33.80	352.46
Lyon	0.40	65.85	66.25	158.29	113.85	272.14	-------	23.40	23.40	295.54
Mineral	-------	64.62	64.62	144.22	91.42	235.64	-------	23.20	23.20	258.84
Nye	17.09	295.27	312.36	360.26	353.77	714.03	-------	-------	-------	714.03
Ormsby	3.85	0.17	4.02	28.10	2.87	30.97	-------	7.00	7.00	37.97
Pershing	-------	167.72	167.72	87.74	168.42	256.16	-------	22.10	22.10	278.26
Storey	-------	22.66	22.66	9.60	25.76	35.36	-------	-------	-------	35.36
Washoe	35.72	273.04	308.76	192.39	323.84	516.23	0.20	41.20	41.40	557.63
White Pine	-------	68.90	68.90	267.18	131.70	398.88	-------	84.60	84.60	483.48
Totals	212.80	1,893.42	2,106.22	3,057.96†	2,535.84	5,593.80	29.80	390.40	420.20	6,014.00

*Net travelable mileages used.

†Does not include 396.52 miles of graveled road and 4.09 miles of bituminous surface treated road considered not to be of a high enough quality to be classed as improved roadway.

TABLE NO. 33

COMPARISON OF AVERAGE DAILY TRAFFIC AT AUTOMATIC RECORDERS FOR SIX FISCAL YEAR PERIODS

Station	Location	Daily Average 1940-1941	1941-1942	1942-1943	1943-1944	1944-1945	1945-1946
101	U. S. 40, East of Sparks	1,451	1,523	1,223	967	1,084	1,847
102A	U. S. 91 and 466, South of Las Vegas	2,471	.....	1,226	915	924	1,703
103	State Route 46, South of Elko	268	223	148	116	131	175
104	U. S. 395, North of Carson City	1,557	1,342	861	668	759	1,373
106	State Route 59, South of Lovelock	189	186	206	202	248	339
107	U. S. 40, East of Elko	870	844	649	554	562	1,015
108	U. S. 50 and 93, North of McGill	469	539	319	224	212	323
109	U. S. 6 and 93, South of East Ely	503	438	296	270	206	308
110	U. S. 93, 95, and 466, Southeast of Las Vegas	1,979	4,898	7,528	3,821	2,550	3,995
112	U. S. 6 and 95, West of Tonopah	410	469	411	384	413	402
114	U. S. 95, Northwest of Las Vegas	225	320	321	342	312	343
115A	U. S. 40, East of Wells	665	783	814	.....	265	565
116	U. S. 40, West of Verdi	1,371	1,422	1,073	811	892	1,666
117	State Route 12, North of Logandale	.....	.....	.....	.....	245	335
118	U. S. 50, South of Carson City	.....	.....	.....	.....	219	625
119	State Route 3, South of Yerington	.....	.....	.....	.....	326	404
Totals		12,458	12,987	15,075	9,274	9,348	15,418
Percentage increase or decrease from previous year			+30.0*	+6.6*	—35.0†	—10.6‡	+64.9

*Excludes Recorder 102A.
†Excludes Recorder 115A.
‡Excludes Recorders 115A, 117, 118, and 119.

TABLE NO. 34

MILEAGE OF RURAL ROADS IN EACH SURFACE TYPE GROUP BY AVERAGE DAILY TRAFFIC VOLUME GROUPS

NEVADA FEDERAL AID SYSTEM, DECEMBER 31, 1945

Average traffic per 24-hour day	Surface Type								
	Primitive and unimproved (AB)	Gravel or stone (E)	Mixed bituminous (G)	High type bituminous (HI)	Portland cement concrete (J)	Total	Undivided	Divided	Daily vehicle miles
0–9	.....	.....	0.222	.....	.....	0.222	0.222	.....	.....
10–24	11.100	.....	0.172	.....	.....	11.272	11.272	.....	191.1
25–49	10.100	21.970	20.344	0.003	.....	52.417	52.417	.....	1748.6
50–99	.....	.....	574.409	.....	0.027	574.436	574.436	.....	39242.5
100–199	.....	.....	545.656	0.054	.....	545.710	545.710	.....	74794.3
200–299	.....	.....	187.883	.....	.....	187.883	187.883	.....	46773.2
300–399	.....	.....	49.411	.....	.....	49.411	49.411	.....	16199.9
400–499	.....	.....	89.286	.....	0.152	89.438	89.438	.....	38536.7
500–599	.....	.....	221.719	.....	0.078	221.797	221.797	.....	123068.9
600–699	.....	.....	116.144	.....	0.101	116.245	116.245	.....	75103.3
700–799	.....	.....	132.389	.....	0.054	132.443	132.443	.....	96652.2
800–899	.....	.....	30.300	.....	0.034	30.334	30.334	.....	25105.6
900–999	.....	.....	13.064	6.606	.....	19.670	19.670	.....	18266.6
1000–1249	.....	.....	26.570	15.642	.....	42.212	42.212	.....	47597.9
1250–1499	.....	.....	35.062	6.851	0.449	42.362	41.913	0.449	56780.7
1500–1999	.....	.....	13.160	0.582	0.296	14.038	14.038	.....	24513.2
2000–2999	.....	.....	17.948	3.933	0.004	21.885	21.885	.....	51885.8
3000–3999	.....	.....	9.293	8.017	0.643	17.953	6.802	11.151	56091.9
4000–4999	.....	.....	0.239	.....	.....	0.239	0.239	.....	957.0
5000–5999	.....	.....	0.893	.....	.....	0.893	0.893	.....	4924.4
Over 5999 (None)	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total	21.200	21.970	2084.164	41.688	1.838	2170.860	2159.260	11.600	
Daily vehicle miles	471.5	843.0	726985.1	66564.4	3569.8	798433.8	764173.3	34260.5	798433.8
Average daily traffic	22	38	349	1597	1942	368	354	2953	368

NOTE—No graded and drained (C), soil surfaced (D), or bituminous surface treated (F) on the Federal Aid System.

TABLE NO. 35
STATUS OF MILEAGE ON DESIGNATED STATE HIGHWAY SYSTEM BY TYPES

	Type	As of June 30, 1944	As of June 30, 1946
(AB)	Primitive and unimproved	2,428.05	1,884.33
(C)	Graded and drained	46.60	250.90
		2,474.65	2,135.23
(D)	Crushed gravel or stone	130.24	502.59
(F)	Bituminous surface treated	----------	19.04
(G)	Roadmix or plantmix asphaltic surface	2,855.31	2,868.65
(HI)	High type bituminous	42.15	47.49
(J)	Portland cement concrete	7.22	7.92
(M)	Dual type	20.99	12.88
		3,055.91	*3,458.57
	Grand total†	5,530.56	5,593.80

*Includes 396.52 miles of graveled road and 4.09 miles of bituminous surface treated road now considered not of a high enough quality to be classed as improved roadway.

†Increased mileage due to additions to the State system by 1945 Legislature and revision of classification and mileage through relogging of unsurveyed routes.

TABLE NO. 36

FEDERAL AID SECONDARY HIGHWAY SYSTEM MILEAGE DISTRIBUTION DATA BY COUNTIES, WITH MILEAGES SELECTED AS OF JUNE 30, 1946

County	Population under 5,000 (percent)	Rural miles non-Federal aid (percent)	Rural vehicle miles (percent)	Total area (percent)	Average percent	Total allocated mileage (miles)	Mileage selected for FAS system (miles)	Percent selected of allocated mileage
Churchill	7.07	4.25	5.55	4.47	5.34	213.6	75.6	35.39
Clark	10.63	5.65	10.07	7.22	8.39	335.6	114.9	34.24
Douglas	2.73	1.36	3.98	0.66	2.18	87.2	58.8	67.43
Elko	14.51	14.54	13.00	15.61	14.41	576.4	237.5	41.20
Esmeralda	2.07	3.83	3.31	3.25	3.12	124.8	55.8	44.71
Eureka	1.81	1.54	2.44	3.81	3.15	126.0	98.1	77.86
Humboldt	6.31	9.08	4.39	8.83	7.15	286.0	116.0	40.56
Lander	2.32	5.33	3.48	5.12	4.06	162.4	127.6	78.57
Lincoln	5.49	7.77	3.35	9.70	6.58	263.2	35.8	13.60
Lyon	5.42	3.65	11.97	1.83	5.72	228.8	165.7	72.42
Mineral	3.11	4.17	2.88	3.40	3.39	135.6	86.7	63.94
Nye	4.80	13.28	7.35	16.45	10.47	418.8	161.4	38.54
Ormsby	4.27	0.30	0.67	0.13	1.34	53.6	13.3	24.81
Pershing	3.61	8.29	3.03	5.46	5.10	204.0	35.5	17.40
Storey	1.62	0.44	2.02	0.24	1.08	43.2	12.7	29.40
Washoe	7.77	5.84	12.63	5.72	7.99	319.6	158.1	49.47
White Pine	16.46	7.68	9.88	8.10	10.53	421.2	144.8	34.38
Totals	100.00	100.00	100.00	100.00	100.00	4000.0	1698.3	42.46

TABLE NO. 37

MILEAGE OF RURAL ROADS IN EACH SURFACE WIDTH GROUP BY AVERAGE DAILY TRAFFIC VOLUME GROUPS
NEVADA FEDERAL AID SYSTEM, DECEMBER 31, 1945

Average traffic per 24-hour day	Surface Width In Feet							
	Under 18	18-19	20-21	22	23-26	27-29	30-32	33
0–9	.....	.....	0.222	.....	.....	.....	.....	.....
10–24	11.100	0.172	.....	.....	.....	.....	.....	.....
25–49	10.100	.....	42.317	.....	.....	.....	.....	.....
50–99	.....	21.051	497.294	43.764	12.248	.....	.....	.....
100–199	.....	187.610	355.130	2.686	0.170	.....	.....	.....
200–299	.....	61.796	97.236	12.699	15.735	.....	.....	.....
300–399	.....	10.866	19.292	.....	18.827	.....	.....	.....
400–499	.....	9.613	67.914	6.409	5.334	0.026	0.021	0.121
500–599	.....	30.881	63.644	26.859	99.261	0.045	1.025	.....
600–699	.....	12.812	21.619	34.163	47.095	0.033	0.011	.....
700–799	.....	29.003	20.779	52.057	30.236	0.029	0.061	.....
800–899	.....	.....	12.623	3.353	13.359	0.046	.....	.....
900–999	.....	0.519	16.037	1.786	0.520	.....	.....	.....
1000–1249	.....	2.365	14.982	23.846	0.095	.....	0.873	.....
1250–1499	.....	.....	25.308	7.347	8.767	.....	.....	.....
1500–1999	.....	0.296	2.352	4.479	4.668	.....	0.352	.....
2000–2999	.....	.....	8.929	12.718	0.021	.....	.....	.....
3000–3999	.....	.....	0.643	6.062	.....	.....	0.013	.....
4000–4999	.....	.....	.....	0.239	.....	.....	.....	.....
5000–5999	.....	.....	.....	0.893	.....	.....	.....	.....
Over 5999	.....	.....	.....	.....	.....	.....	.....	.....
Total	21.200	366.984	1266.321	239.360	256.336	0.179	2.356	0.121
Daily vehicle miles	471.5	99431.6	313673.6	188012.1	153030.7	117.2	2354.8	48.9
Average daily traffic	22	271	248	785	597	655	999	404

Average traffic per 24-hour day	Surface Width In Feet								
	34-35	36-39	40-43	44	45-49	50-54	55-59	60 and over	Total
0–9	.....	.....	.....	.....	.....	.....	.....	.....	0.222
10–24	.....	.....	.....	.....	.....	.....	.....	.....	11.272
25–49	.....	.....	.....	.....	.....	.....	.....	.....	52.417
50–99	.....	0.077	.....	.....	.....	.....	0.002	.....	574.436
100–199	.....	0.074	.....	.....	.....	0.002	0.038	.....	545.710
200–299	.....	.....	0.417	.....	.....	.....	.....	.....	187.883
300–399	0.140	.....	0.005	.....	.....	0.281	.....	.....	49.411
400–499	.....	.....	.....	.....	.....	.....	.....	.....	89.438
500–599	0.055	.....	.....	0.015	.....	0.012	.....	.....	221.797
600–699	0.038	.....	0.015	0.090	.....	0.369	.....	.....	116.245
700–799	.....	0.051	0.112	0.081	0.034	.....	.....	.....	132.443
800–899	.....	.....	.....	.....	0.028	0.454	.....	0.471	30.334

900–999	0.033	-------	-------	-------	-------	-------	0.266	0.509	19.670
1000–1249	-------	0.500	-------	-------	-------	-------	-------	-------	42.661
1250–1499	-------	0.008	-------	-------	0.449	-------	0.034	-------	41.913
1500–1999	-------	0.091	-------	-------	0.716	0.429	0.655	-------	14.038
2000–2999	0.011	-------	-------	-------	-------	0.206	-------	-------	21.885
3000–3999	-------	0.033	-------	-------	10.283	-------	0.067	0.852	17.953
4000–4999	-------	-------	-------	-------	-------	-------	-------	-------	0.239
5000–5999	-------	-------	-------	-------	-------	-------	-------	-------	0.893
Over 5999 (None)									
Total	0.277	0.834	0.549	0.186	11.510	1.753	1.062	1.832	2170.860
Daily vehicle miles	167.7	894.2	199.4	125.7	32904.9	2029.8	1534.8	3436.9	798433.8
Average daily traffic	605	1072	363	676	2859	1158	1445	1876	368

TABLE NO. 38

COMPARATIVE DATA ON STATE MOTOR VEHICLE REGISTRATION FEES RECEIVED 1942–1945[1]

Month	1942 receipts	1943 Receipts	1943 Percent of 1942 Month	1943 Percent of 1942 To date	1944 Receipts	1944 Percent of 1943 Month	1944 Percent of 1943 To date	1945 Receipts	1945 Percent of 1944 Month	1945 Percent of 1944 To date
January	$85,843	$45,237	52.7	.....	$56,096	124.0	.....	$62,936	112.2	
February	69,775	56,973	81.7	65.7	64,684	113.5	118.2	75,056	116.0	114.3
March	94,725	95,788	101.1	79.1	96,350	100.6	109.7	100,108	103.9	109.7
April	35,918	66,280	184.5	92.3	50,176	75.7	101.1	36,248	72.2	102.6
May	27,498	34,276	124.6	95.2	39,141	114.2	102.6	25,990	66.4	98.0
June	12,336	22,181	195.7	98.4	16,531	74.5	100.7	19,271	116.6	99.0
July	11,010	14,703	133.5	99.5	6,801	46.8	98.3	7,039	103.4	99.1
August	9,144	6,679	73.0	98.8	6,872	102.9	98.4	4,079	59.4	98.2
September	6,551	14,839	226.5	101.2	2,596	17.5	95.0	10,468	403.2	100.1
October	5,559	7,214	129.8	101.6	8,354	115.8	95.5	7,649	91.6	100.0
November	7,606	6,682	87.9	101.3	4,217	63.1	94.9	3,803	90.2	100.2
December	3,399	6,566	193.2	102.2	2,438	37.1	93.9	6,324	259.4	101.3
Totals	$369,364	$377,418	.....	.....	$354,256	.....	.....	$358,971		

[1]Compiled from reports prepared by the State Motor Vehicle Department. Receipts include all fees collected. Calendar year totals.

TABLE NO. 39

COMPARATIVE DATA ON STATE MOTOR VEHICLE FUEL TAX RECEIPTS 1942–1945[1]

Month	1942 Net amount accruing to State	1943 Net amount accruing to State	1943 Percent of 1942 Month	1943 Percent of 1942 To date	1944 Net amount accruing to State	1944 Percent of 1943 Month	1944 Percent of 1943 To date	1945 Net amount accruing to State	1945 Percent of 1944 Month	1945 Percent of 1944 To date
January	$101,086	$88,458	87.5	.....	$79,902	90.3	.....	$74,694	93.5	
February	106,698	71,812	67.3	77.1	83,916	116.9	102.2	79,240	94.4	94.0
March	131,125	94,486	72.1	75.2	92,847	98.3	100.7	94,387	101.7	96.7
April	135,220	93,347	69.0	73.4	93,734	100.4	100.7	102,317	109.2	100.1
May	140,498	106,180	75.6	73.9	101,887	96.0	99.6	106,319	104.3	101.0
June	151,901	93,372	61.5	71.4	90,441	96.9	99.1	113,955	126.0	105.2
July	166,184	117,718	70.8	71.3	108,878	92.5	97.9	125,411	115.2	106.9
August	159,123	104,175	65.5	70.5	107,611	103.3	98.7	147,727	137.3	111.2
September	160,801	113,113	70.3	70.4	103,710	91.7	97.8	174,001	167.8	118.0
October	142,939	128,549	89.9	72.5	104,986	81.7	95.7	172,615	164.4	123.0
November	163,400	103,359	63.3	71.5	87,545	84.7	94.7	141,450	161.6	126.2
December	82,592	[2]102,997	124.7	74.2	91,963	89.3	94.2	127,286	138.4	127.2
Totals	$1,641,567	$1,217,566	.....	.....	$1,147,420	.....	.....	$1,459,402		

[1]Compiled from the records of the Nevada Tax Commission.
[2]Actual amount $102,976. Deduction of $21 to cover adjustments for previous months. Calendar year totals.

TABLE NO. 40

COMPARATIVE DATA ON STATE CARRIER LICENSE FEE COLLECTIONS 1942–1945[1]

Month	1942 receipts	1943 Receipts	1943 Percent of 1942 Month	1943 Percent of 1942 To date	1944 Receipts	1944 Percent of 1943 Month	1944 Percent of 1943 To date	1945 Receipts	1945 Percent of 1944 Month	1945 Percent of 1944 To date
January	$107,739	$121,543	112.8	.....	$153,671	126.4	.....	$205,008	133.4	
February	144,067	160,036	111.1	111.8	175,017	109.4	116.7	90,478	51.7	89.9
March	29,323	26,578	90.6	109.6	26,094	98.2	115.1	31,524	120.8	92.2
April	40,574	22,279	54.9	102.7	14,974	67.2	111.9	17,808	118.9	93.3
May	21,373	9,946	46.5	99.2	17,469	175.6	113.8	14,742	84.4	92.9
June	9,670	8,738	90.4	99.0	9,275	106.1	113.6	7,696	83.0	92.6
July	17,783	16,399	92.2	98.6	8,065	49.2	110.7	13,420	116.4	94.1
August	6,505	8,282	127.3	99.1	7,399	89.3	110.2	7,798	105.4	94.3
September	8,742	5,259	60.2	98.3	4,402	83.7	109.8	11,075	251.6	96.0
October	6,029	6,446	106.9	98.4	4,989	77.4	109.3	6,204	124.4	96.3
November	286	5,554	1,941.9	99.7	6,297	133.4	109.4	4,587	72.8	96.0
December	55	12,966	23,574.5	103.0	1,979	15.3	106.3	1,826	92.3	95.9
Totals	$392,146	$404,026	.....	.....	$429,631	.....	.....	$412,166		

[1]Compiled from the records of the State Controller. Act administered by State Public Service Commission. Calendar year totals.

TABLE NO. 41

COMPARATIVE DATA ON MOTOR VEHICLES REGISTERED 1942–1945[1]

Month	1942 motor vehicles	1943 Motor vehicles	1943 Percent of 1942 Month	1943 Percent of 1942 To date	1944 Motor vehicles	1944 Percent of 1943 Month	1944 Percent of 1943 To date	1945 Motor vehicles	1945 Percent of 1944 Month	1945 Percent of 1944 To date
January	13,951	6,903	49.5	.....	8,388	121.5	.....	9,718	115.9	
February	9,719	8,566	88.2	61.1	9,794	114.3	117.5	11,054	112.9	114.2
March	12,026	13,052	108.5	79.9	14,024	107.2	112.8	13,087	93.3	105.1
April	4,877	7,793	159.8	89.5	5,163	66.3	102.8	4,136	80.1	101.7
May	3,420	4,495	131.4	92.8	4,058	90.3	101.4	2,512	61.9	97.8
June	1,766	2,969	168.1	95.7	1,922	64.7	99.0	1,530	79.6	96.7
July	1,299	2,006	167.3	97.3	757	37.7	96.3	781	103.2	97.1
August	870	[2]680	78.2	96.9	741	114.0	96.5	402	54.3	96.4
September	752	1,858	247.0	99.3	281	15.1	93.4	1,152	410.0	98.3
October	572	946	165.4	100.0	1,035	109.4	93.7	821	79.3	97.9
November	754	639	84.7	99.8	486	76.1	93.5	385	79.2	97.7
December	400	491	122.8	100.0	224	45.6	93.0	403	180.0	98.1
Totals	50,406	50,398	.....	.....	46,873	.....	.....	45,981		

[1]Compiled from reports prepared by the State Motor Vehicle Department. Calendar year totals.
[2]Includes thirty units covering adjustment for month of March.

TABLE NO. 42

COMPARATIVE DATA ON STATE MOTOR VEHICLE IMPOST REVENUE 1942–1945[1]

Month	1942 revenue	1943 Revenue	1943 Percent of 1942 Month	1943 Percent of 1942 To date	1944 Revenue	1944 Percent of 1943 Month	1944 Percent of 1943 To date	1945 Revenue	1945 Percent of 1944 Month	1945 Percent of 1944 To date
January	$294,668	$255,238	86.6	-------	$289,669	113.5	-------	$338,138	116.7	
February	320,540	28,821	90.1	88.4	323,617	112.0	112.7	244,774	75.6	95.0
March	255,173	216,852	85.0	87.4	215,291	99.3	108.9	226,019	105.0	97.6
April	211,712	181,906	85.9	87.1	158,884	87.3	104.8	156,373	98.4	97.7
May	189,369	150,402	79.4	86.0	158,497	105.4	104.8	147,051	92.8	97.1
June	173,907	124,291	71.5	84.2	116,247	93.5	103.7	145,422	125.1	99.6
July	194,977	148,820	76.3	83.3	123,744	83.2	101.4	145,870	117.9	101.3
August	174,722	119,136	68.2	81.8	121,882	102.3	101.5	159,604	130.9	103.7
September	176,094	133,211	75.6	81.5	110,708	83.1	100.0	195,544	176.6	108.7
October	154,527	142,209	92.0	82.3	118,329	83.2	98.6	186,468	157.6	112.0
November	171,292	115,595	67.5	81.2	98,059	84.8	97.8	149,840	152.8	114.2
December	86,046	122,529	142.4	83.2	96,380	78.7	96.6	135,436	140.5	115.5
Totals	$2,403,077	$1,999,010	-------	-------	$1,931,307	-------	-------	$2,230,539		

[1]Includes Motor Vehicle Fuel Tax, Motor Carrier License Fees, and Motor Vehicle Registration Fees. Calendar year totals.

TABLE NO. 43

LICENSES ISSUED JULY 1, 1944, TO JUNE 30, 1946

Fiscal year	Operators			Chauffeurs			Total
	Original	Renewal	Duplicate	Original	Renewal	Duplicate	
1945	6,603	33,675	833	1,661	3,008	179	45,959
1946	10,480	9,095	753	2,359	4,287	211	27,185
Total	17,083	42,770	1,586	4,020	7,295	390	73,144

TABLE NO. 44

REVOCATIONS OF DRIVING PRIVILEGES, JULY 1, 1944, TO JUNE 30, 1946

Drunken driving	219
Unlawful taking of vehicle	6
Habitual negligence	9
Driving while license revoked	2
Negligent homicide	2
Hit and run	1
Mentally incompetent	1
Total	240

TABLE NO. 45

SUSPENSIONS OF DRIVING PRIVILEGES, JULY 1, 1944, TO JUNE 30, 1946

Two or more violations	46
Reckless driving and speeding	175
False affidavit	13
Incorrect information	7
Allowing minor to drive	2
Miscellaneous	11
Total	254


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